

FLIGHT

First Aero Weekly in the World.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

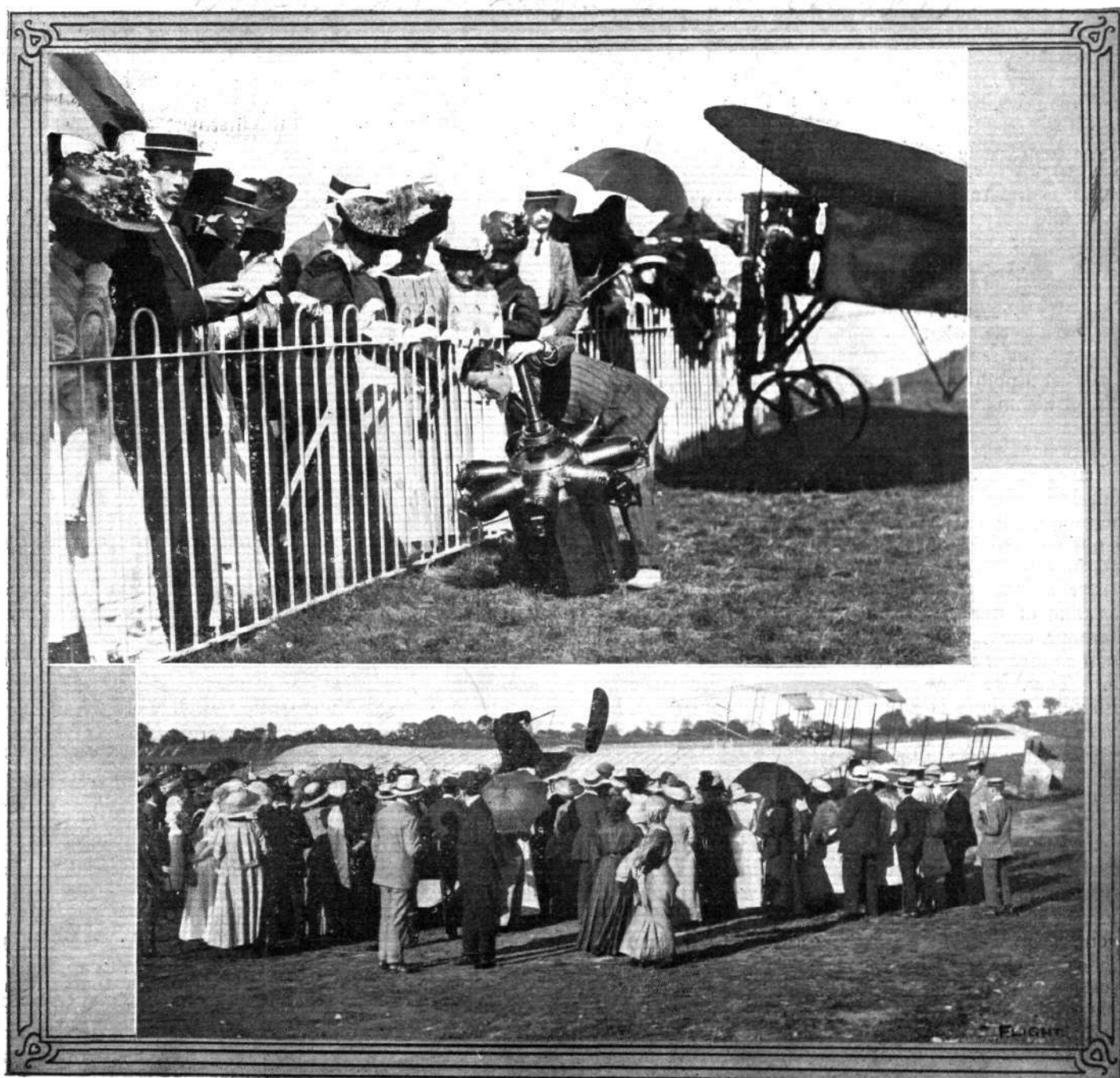
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THE WOMEN'S AERIAL LEAGUE AT HENDON.—The recent visit of the members of the Women's Aerial League to the London Aerodrome at Hendon. Though great disappointment was experienced in it not being possible to give any flights owing to the strong wind, the visitors were kept thoroughly interested in studying different points of the machines. Mr. Grahame-White is seen in the lower picture giving a practical lecture upon the Blériot monoplane, whilst above, Mr. Compton Paterson is explaining the working of the Gnome engine.

“CONSIDERING THE QUESTION.”

It is only a week or two ago that we had occasion to animadvert upon the policy of *laissez-faire* which characterises the relations of the War Office authorities and flight. The strictures we passed were doubtless severe, but we still hold that they did not err on the side of undue rigorousness. The whole War Office policy in this regard may be summed up quite adequately by saying that it is simply and purely one of marking time. We could look with equanimity on this if only our rivals across the narrow seas were doing the same; but they are not, and therein lies the seriousness of the thing. While we stand still they go ahead. The progress of military aviation in France is too well known to need emphasis. In Germany the military authorities, neglecting nothing which can make for greater efficiency in the huge fighting machine they control, are paying the closest attention to every development; and though no more is allowed to leak out than can be helped, all the information that does find its way into the public prints goes to show that the German aerial corps is a factor which will have to be reckoned with by any Power which may chance to find itself involved in a war with the greatest military power in Europe. In Austria, in Russia, in Italy, and even in Spain, the story is much the same—only we lag behind, because our officials are so steeped to the lips in conservatism that they cannot recognise the obvious when it is absolutely thrust upon them.

At the present moment the theories of defence formulated by what is known as the “Blue Water School,” appear to dominate our military policy. *FLIGHT* is neither a political nor a Service journal, so that it does not fall within its province to descant upon the merits of the strategic problems involved by adopting as an article of national faith the tenets of this or any other school of military thought. Indeed, any such discussion would be entirely wide of the mark, because we are concerned at the moment purely with the question of *materiel*, which is not affected by any considerations of precisely where and how it is to be used. That is to say, it does not matter whether our first line of defence is to be on the coastline of our potential enemy or inside Portsmouth Harbour, our equipment and *materiel* must be at least as good as that of the enemy if we are to have a chance at all. That, we may safely predicate, is quite beyond dispute. If there is any error in theory involved, it is that it does not carry us far enough.

Things being as they are, we come now to the consideration of what we are doing to prepare for that *dies irae* which many are convinced is not so very far away. So long as warfare was likely to be restricted to what we may call the methods of orthodoxy we could, as a First Lord of the Admiralty told us not so long ago, rest easy in our beds. But within the last two years a new factor has entered into the calculation whose potentialities are even now undreamed of. That it will exercise a tremendous modifying influence on the war of the future there cannot be the slightest room for doubt. Without going the length which Mr. H. G. Wells takes us in his “War of the Air,” we can almost assuredly prophesy that the Power which is mistress of the air will be able to impose its own terms on the rest of the world.

With the question of flight and the Army we have already dealt on a previous occasion. Apparently the Army Council thinks that our requirements will be well

enough served by something falling a long way short of what our possible European rivals are doing. If we are committed to “Blue Water” defence there may be some ground for the official line of thought, but at the same time it is pertinent to voice the reminder that the whole British Navy massed outside an enemy’s ports cannot stop the oversea passage of one aeroplane—to fight the cruiser of the air entails possession of craft able to meet it on its own terms. That is a very obvious proposition. What is the Admiralty doing in the matter? Let the Admiralty speak for itself. The other day in the House of Commons Mr. McKenna was asked if he was aware of the experiments conducted in France with regard to the detection of submarines by observers in aeroplanes and communication between aeroplanes and warships by wireless telegraphy, and if he would state what progress was being made by the Admiralty in training officers as aviators for scouting and offensive purposes. In his reply the First Lord said that he had no information beyond what had appeared in the Press, so far as concerned the first part of the question. As regards the second part, *four* officers are just completing a six months’ course at Eastchurch and the question of commencing another course is now “under the consideration of the Board.” Questioned by Mr. Arthur Lee as to the probability of the Admiralty making a large increase in the number of officers to be trained as aviators, the First Lord said that: “We are considering the question of the requirements of the Service.”

It is something to the good that we are “considering” things, but, Mr. McKenna, do you not realise that while we are sitting tight and thinking things over, our rivals are *doing*? When war comes it will come suddenly, and even though aeroplanes can be built in a day they will be so much useless lumber unless we have the men to fly them. The machines we can have for the paying, and as our national purse is a long one we can equip ourselves with any number of them in time of need, but if we had all the wealth of the golden city of Manoa it would not purchase one trained man to take the air in them.

Our rivals have got the machines, and they are manufacturing the men in increasing numbers who will use them when the time comes. We have neither, except in a very minor degree—but, soothing thought, we “are considering our requirements.” But the question that has to be answered is simply this: Do we require any aeroplanes to keep us abreast of our obligations of defence? The answer is obvious. It matters not that the ideal military machine has not arrived—that is a detail which time will set right. It is the man that matters more than the machine, and what our officials do not seem to see is that it is all-essential that we should get on with their training at once, and plenty of them. What would have been said ten years ago to a responsible Defence Minister who had gravely told the nation that as it was obvious that weapons and instruments of war had not reached finality, it did not seem of use to train men in the use of armaments which might be obsolete in a few years, and his Department was “considering” the question of what was to be done? The parallel is by no means far-fetched. Indeed, it very accurately represents the attitude of the Government of to-day with regard to flight and the aeroplane.

A Study of Bird Flight

By Dr. E. H. Hankin, MA. DSc.
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CHAPTER I.—Introductory.

ABOUT 23 miles from Agra the rocky hill of Futtepur-Sikir rises steeply from the plain. If a wind is blowing birds may be seen gliding at their ease over the crest of the hill, apparently taking advantage of the ascending current of air. But I have also been at Futtepur-Sikri on other occasions, when the wind was so light that it was impossible to tell its direction by puffing smoke from a cigar. Then I have seen the birds, in this apparent calm, making the same astounding movements of soaring flight, sometimes gliding horizontally, sometimes—for a few feet—rising as steeply as if they were climbing some invisible staircase, but always with an absence of any visible effort and only with occasional directive movements that were as difficult to understand as to see.

If no explanation is forthcoming of a natural phenomenon, what is required is not theory but observation and measurement. I have thought it worth while, therefore, to take advantage of such opportunities as I have had by making observations and measurements on soaring flight, and on the conditions under which it occurs.

The species of birds that came under my notice, in the first instance, were the following:—

- 1.—The cheel (*Milvus govinda*): Span, 4 ft.; loading, .55 lb. per sq. ft.
- 2.—The white scavenger vulture (*Neophron gingianus*): Span, 5 ft.; loading, .87 lb. per sq. ft.
- 3.—The black vulture (*Otogyps calvus*): Span, 6½ ft.; loading, 1.23 lbs. per sq. ft.
- 4.—The white backed vulture (*Gyps bengalensis*), which I shall refer to as the common or large vulture. Span, 7 ft.; loading, 1.13 lbs. per sq. ft.

It will be noticed that these birds differ greatly in the amount of weight lifted per square foot of wing area. It will be seen that these differences are in close relation with their capacity for soaring flight under different conditions. The lightweight cheel is able to soar under conditions that quite exclude any attempt at soaring flight on the part of the heavier birds.

The cheel, or pariah kite, is perhaps the commonest bird in Indian towns and cantonments. If observed during the heat of the day, and especially in a varying wind, its movements at first sight appear to have nothing in common with the majestic circling flight of the larger soaring birds. The wings of the cheel appear to yield to every puff of wind, as it glides in any direction with astounding grace and facility. The tail at one moment is furled, at another expanded like a fan, and frequently shows sudden but slight movements of small duration. Slight changes in the inclination of the wings follow one another so suddenly and so often without easily visible effect on the direction of flight, that it may well appear a hopeless task to discover their nature and object.

The soaring flight of the larger birds is puzzling, not from an excess of directive movements, but from their apparent absence. Usually during the day a cluster of vultures may be seen circling over any slaughter-house in or near Agra. At the time of starting their morning flight they usually cease flapping at a height of from 10 to 20 metres from the ground. They then glide in circles with complete absence of propulsive movement, and usually reach a height of from 500 to 700 metres in the cold weather, and up to about 1,300 metres in the hotter months of the year. Under certain conditions circle after circle may be watched without any movements of the wings being seen. Their gliding, whether or not it may happen to be accompanied by gain in height, often appears as undirected as it is free of effort.

CHAPTER II.—Observations on the Time of Commencement of Soaring Flight.

From the foregoing description it will be appreciated that at the time of commencing my observations, it appeared to me that there was little hope of learning much about soaring flight by watching the movements of the birds when they had reached a great height. Obviously at any given

moment a bird may be trying to gain height, to remain where it is, or to descend. When, on the other hand, the birds are near the ground and commencing to soar, there is more probability that at any given moment they are trying to rise. From this point of view it occurred to me that it was worth while to observe soaring birds as they started in the early morning.

My observations soon revealed the unexpected fact that there is a definite time, varying from day to day, at which soaring commences. For instance, if on a particular day in October I saw a cheel soaring for the first time at 8.30 a.m. then within a few minutes at least a dozen cheels would be seen circling in the air. My post of observation was on the roof of my house, from which position I have a view of several square miles of country, including the town and cantonment of Agra. Apparently within, as a rule, about five minutes the air becomes capable of supporting soaring flight over the whole area observed.

When the fact is thus baldly stated another possibility suggests itself, namely, that cheels have an instinct that teaches them not to indulge in soaring flight before half-past eight. A closer acquaintance with the facts definitely excludes this possibility. For instance, at Jharna Nullah, near Agra, is a factory of dried buffalo flesh. If in the early morning a gun is fired near this factory, cheels and vultures rise in flap-gliding flight, and in a minute or two, settle. I may parenthetically explain that soaring birds never indulge in prolonged flapping flight. Flapping is always alternated with periods of gliding; each period may last for a few seconds. I propose to describe this form of flight as "flap-gliding." Supposing a gun is fired a little later, when the air has become soarable for cheels, but not for vultures, they (the cheels, that were still settled) will rise into the air and remain there circling. Usually about half an hour to an hour later the air has become soarable for vultures. On then firing a gun, any vultures that had not yet started will rise into the air and circle. As will be further described in a later chapter, the different species of soaring birds start at somewhat definite times after the cheel. The heavier the bird, the later is this time. Further, I shall have to describe different forms of soaring flight, and shall show that they commence at different times after the commencement of circling. These different facts taken together leave no room for doubt that the air in the early morning is unsuitable for soaring flight, and that in fine weather it gets more and more suitable for such flight as the day goes on.

I propose to bring forward evidence bearing on the question of the nature of the change in the air that makes it soarable in a later chapter. But I may state here that my observations make it practically certain that this change has nothing directly to do with any strengthening of the force of the wind. Soaring often commences at a time when the early morning wind has just died away, and when such wind as exists is so light that it is difficult to determine its direction.

As illustrating the facts under discussion I will here bring forward an extract from my diary:—

November 25th, 1909.—From 8.30 onwards the wind was light, and unable to move the leaves of the trees near, but at 9.35 the leaves were occasionally in motion.

8.44 to 9.16.—Fifteen cheels were observed at intervals either flap-gliding or flap-circling.

9.17.—Two cheels circling, and two flap-circling near house.

9.18.—Two cheels circling near infantry barracks, 1½ miles distant.

9.19.—One cheel circling near Company Garden (1 mile distant) and one circling near fort (1½ miles distant).

9.35.—Many cheels circling in different directions.

The time of commencement of circling of cheels is usually at about 9.30 during December. The time gets earlier month by month as the weather gets warmer, till in June cheels are able to circle usually by 7 a.m. From June onwards the time gradually recedes.

CHAPTER III.—Description of Circling Flight.

In the following description of circling I shall make use of two expressions that will be familiar to yachtsmen: by "up-wind" I mean a direction against the wind or going to windward; by the term "down-wind" I mean a direction with the wind or going to leeward. I use the term "circle" and "circling" as a matter of convenience, although, as will be shown later, the tracks described by circling birds are not perfect circles.

At the commencement of circling flight in the morning the cheel shows the same steady and, so to speak, careful flight as do the heavier birds later in the day. The wings appear to remain in the same plane, and the use of balancing or directive movements can only with difficulty be discovered.

The cheel rises into the air by flapping flight to a height of a few feet above the tree tops. Then it commences to glide in circles. Sometimes at first these circles are described partly by gliding and partly by flapping. The flapping usually occurs on the up-wind side of the circle. But, either immediately or after a short interval, the bird will be seen to be circling without flapping. In spite of the absence of propulsive effort the bird will be seen to be gaining height. The gain of height is usually on the up-wind or windward sides of the track.

In the case of vultures, at the commencement of their circling flapping may occur at any part of the circle. In one circle there may be four or five periods of flapping. But when the flapping ceases the gain in height will, as a rule, be seen, as in the case of cheels, to be mainly on the up-wind and windward sides of the circle.

This gain in height on the windward and up-wind parts of the circle is the more surprising, in that the cheel all the time is drifting to leeward. Each circle described is a few feet to leeward of its predecessor. More than once, when the wind was light and variable, I have discovered a change in its direction by observing the position of gain of height of a circling cheel, and proved the truth of the information thus obtained by seeing the direction of some smoke. Captain S. Hutcheson, of the 3rd Brahmans, informs me that he has made the same observation of gain in height while going to windward in soaring birds, both in South Africa and in the Himalayas.

But this windward gain of height is not a constant phenomenon. Sometimes there is a gain of height on the leeward side of the circle; sometimes height is gained on the down-wind side. Rarely gain in height appears to occur almost equally all round the circle.

The following extract from my diary is an example of leeward gain of height:—

December 24th, 1909.—In the morning the sky was clouded over. There was a light east wind. The sun came out at 10.30, and soaring commenced at 10.35. At 1.30 I was standing on the top of the gateway of the mosque at Futtepur-Sikri. The sun was shining. The wind was from the east and very light; its direction was shown by smoke from a fire on the top of the ridge below me. The column of smoke was inclined over towards the west, and showed slow but distinct movement. Also occasionally I could feel the movement of the air. Some cheels, a white scavenger vulture and a large vulture were soaring at a lower level than where I was standing at about 100 yards distance. The vulture was seen to gain height both at the windward and at the leeward sides of the circle.

Certainly sometimes, perhaps always, when there is gain of height on both the windward and leeward sides, there may be a loss of height between the two positions of gain, that is to say, during the up-wind and down-wind parts of the circle. For instance, in the case of a vulture circling overhead in the afternoon, with a westerly wind, I have

observed that the sun illuminated the under sides of the wings at the commencement of the down-wind side of the track, proving that at that moment the bird was gliding downwards.

A noteworthy fact about the early morning circling of cheels and the circling of other birds later in the day is its slowness and regularity. Whenever I have had an opportunity of measuring the size of circles described by cheels I have found them to be about 12 metres in diameter. The circles described by vultures are generally about 40 or 50 metres in diameter.

Cheels take 7 to 9 seconds, as a rule, to complete a circle. If a succession of circles are timed with a stop watch, the period in the case of cheels often will be found not to vary by more than one-fifth of a second. The larger birds usually circle in from 13 to 16 seconds.

The following extracts from my diary may be quoted in support of the above statements:—

October 31st, 1909.—On Tundla Road to leeward of Jharna Nullah. Wind west. A white scavenger vulture observed to make successive circles in 9, 8, 10, 9, 10 and 12 seconds. Then it made a circle of 7 seconds and glided off in a straight line. A large vulture about 150 metres overhead made successive circles in 19, 10, 13, 15, 13 and 13 seconds. An eagle circled in 11, 14 and 15 seconds. A black vulture made successive circles in 17, 16, 15 and 20 seconds. While making these observations a feather was seen floating in the air at 10.20 and three feathers at 10.30. They were at the height at which the birds were soaring. They drifted at about walking pace and appeared to travel horizontally.

December 30th, 1909, at Jharna Nullah.

9.45.—Cheels began circling.

9.53.—White scavengers began circling with occasional flaps. They circled in 12 seconds. Cheels were circling in 9 seconds usually, but sometimes in 10 or 11 seconds. (My observations suggest that the rate is usually less in warmer weather.)

9.55.—Five columns of cheels were up.

10.22.—White scavengers circling without flapping.

10.24.—Large vultures had commenced soaring and were circling in 13 seconds.

10.35.—A feather seen floating in the midst of a group of circling cheels. It was about 10 metres above my head. Observation with the telemeter failed to show either rise or fall. At this time cheels were circling in 11 seconds, and vultures in 13 to 16 seconds.

10.45.—First black vulture seen soaring.

11.15.—A black vulture seen making circles in 15 seconds.

In another kind of soaring flight about to be described the speed is distinctly faster than it is in circling. If soaring is difficult and if the bird has to flap for part of the circle, the speed is, so far as I have observed, the same as it would be if the bird were gliding the whole way round. There is no attempt to increase speed in order to make gain in height easier. In my notes I find the suggestion that perhaps the air has a structure in virtue of which the soaring bird can only take energy from it at a particular speed, which speed may be different under different conditions. Evidence that I hope to bring forward in a later chapter will, I think, show that this suggestion only partially represents the actual facts of the case.

Apart from the gain in height, which does not necessarily occur in every circle, the circles described by soaring birds are practically always perfectly horizontal.

In a later chapter I hope to describe my observations on directive movements in gliding flight. It will then be possible to describe the movements of the circling bird in greater detail, but, as will be seen, without in this way arriving at any solution of the mystery.

(To be continued.)

Grahame-White is Returning to America.

CONSIDERING how successful was Mr. Grahame-White's tour in America last autumn, it is not surprising to hear that he has arranged to visit the States again. He leaves to-day (Saturday) on the "Mauretania," en route for New York.

No doubt he has designs on some of the speed prizes, as in addition to a 50-h.p. Grahame-White Baby biplane, he is taking over with him a two-seater Nieuport monoplane, engined with a 70-h.p. Gnome. He will, however, find a serious rival in Weymann,

who has crossed the Atlantic with his Gordon-Bennett-winning 100-h.p. Gnome-Nieuport, and who evidently has similar designs on speed prizes. Nevertheless, he should make a good thing out of passenger-carrying, as, up to the present, the American enthusiasts have had no option but to take their aerial excursions in biplanes. In fact, as far as memory can be trusted, Sopwith's 70-h.p. two-seater Blériot seems to be the only passenger-carrying aeroplane that has yet visited the States, and this machine unfortunately suffered disintegration soon after its arrival.

AUGUST 12, 1911.

FLIGHT

WOMEN'S AERIAL LEAGUE AT HENDON.

RECENTLY a special demonstration was arranged to be given at Hendon by Mr. Grahame-White before the members of the league, but as luck would have it the weather was anything

A number of prominent members attended, including Sir Melvill and Lady Beachcroft, Sir Edward Seymour, Lady O'Hagan, Lady Meiklejohn, Mrs. and Miss Pankhurst, Miss Baden-Powell, Mrs.



WOMEN'S AERIAL LEAGUE AT HENDON.—On the left Sir Edward Seymour, Mr. Grahame-White, Miss Stanley, and Miss Baden-Powell. On the right Sir Melvill and Lady Beachcroft.

but propitious, and all idea of carrying any of the visitors as passengers was out of the question, although many were quite prepared to take their chances had Mr. Grahame-White succumbed to their endeavours to overcome his more cautious judgment.

Matt Smyth, Miss de Cordova, Miss Beatrice Fry, Miss Hilda Fry, Miss Thomas, Miss Cobley, Mrs. Bholanaath, and Capt. D. H. Rai, of the Indian Medical Service, Miss Stanley, Capt. Gonne, Col. H. S. Massy, Mrs. Massy, Miss Osborn, and Mr. Desbleds,



WOMEN'S AERIAL LEAGUE AT HENDON.—From left to right: Mr. L. Blin Desbleds (Hon. Tech. Adviser to the W.A.L.), Miss Hilda Fry, Mrs. Watt Smyth (Hon. Sec. W.A.L.), Miss Beatrice Fry, Mrs. W. Hutton (late Hon. Sec. of Entertainments Committee of the W.A.L.).



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WOMEN'S AERIAL LEAGUE AT HENDON.—From right to left : Miss Osborn, Miss De Cordova, Miss Thomas, Lady August Manns, Miss Hearn, Miss Christabel Pankhurst.

technical adviser to the Women's Aerial League. In the hope of the tricky wind moderating the company remained during the greater part of the afternoon. Time did not hang heavily on their hands as Mr. Grahame-White personally gave an interesting discourse upon the art of flying, and demonstrated the application of the principles by a description illustrated with the aeroplane itself. By these stationary demonstrations a great many points were explained which had previously been but little appreciated by the members. Mr. C. Compton Paterson also helped considerably to entertain the visitors, and it was surprising to notice the keen interest taken by the fair sex in such very unsympathetic things as

Gnome engines, chassis stresses and other similar items. Instinctively when, to demonstrate the pulling power of the propeller, the engine was set to work with the machine anchored, and the effect behind was seen of the rapidly-revolving propeller, almost every lady clutched frantically at her hat. Mr. Grahame-White explained, however, that the rather startling noise and rushing effects of the air from the propeller was more or less unnoticeable when actually flying through the air, although it was hardly suggested that feather millinery was the most suitable attire for practical flying. In spite of the disappointment at no passenger carrying being possible everybody went away thoroughly pleased with their afternoon's experience.



PROGRESS OF FLIGHT ABOUT THE COUNTRY.

NOTE—Addresses, temporary or permanent, follow in each case the names of the clubs, where communications of our readers can be addressed direct to the Secretary. We would ask Club Secretaries in future to see that the notes regarding their Clubs reach the Editor of **FLIGHT**, 44, St. Martin's Lane, London, W.C., by first post Tuesday at latest.

Aero Models Association (South-Eastern Branch).

THE monthly model flying competitions, held under the auspices of the South-Eastern Branch of the Aero Models Association, passed off very satisfactorily on Saturday, July 29th. As on previous occasions the meeting took place on the Golf Links, Mitcham Common, with a very fair attendance. The results were declared as follows: Duration, 1st prize, R. F. Mann, 59 secs.; distance, 1st prize, C. B. Ridley, 530 yards. Those desirous of joining the Association are kindly requested to communicate with Mr. Alfred B. E. Cheeseman, Secretary Aviation Section A.A. and M.U., Caxton House, Westminster, S.W.

Leeds Model Aeroplane Club (5A, HULLAND ST., HUNSLET RD.).

THE above club has now been formed, with Mr. S. Bellringer, of Chapelton, as acting president, and the organiser, Mr. Tom Walker, as hon. sec. It was decided at the last meeting, that as soon as possible a room be rented near the centre of the town, to be equipped and used as the club workroom. It is whispered that the hon. sec. has already secured an engagement with a Halifax gentleman to give an exhibition in his grounds. All communications respecting the club should be addressed to the hon. sec. at the above

address, who will also be pleased to receive catalogues, &c., from dealers in model-making materials.

Liverpool Model Aero Club (39, BROOK ROAD, BOOTLE).

OWING to strong winds no flying was possible last week. Mr. R. N. Harrison has offered a prize of 5s. for the longest flight in the month of August. Competitions to be held to-day (12th) and on succeeding Saturdays. Entrance fee 1d. Only open to members. Another member, Mr. G. H. Kilshaw, has won our thanks by offering to make illuminated certificates for those who pass tests imposed.

A flying ground has been generously offered us free of rent by Mr. H. Pennington, of Bootle. It is situated in Hawthorne Road, adjoining Mr. Lord's tarworks and the Patent Fuse Firelighter Co., being screened by two big buildings.

Scottish Ae.S. Model Aero Club.

A COMPETITION will be held on Saturday, 19th inst., at Alexandra Park, Dennistoun, under the auspices of the above club. Competitors to meet at the Pond at 4 p.m. Entrance fee, members, one model, 6d. and 2d. per model thereafter; others, one model, 1s., and 6d. per model thereafter. Entries should be made to Mr. Wm. Foster, Rochelle, Limeside Avenue, Rutherglen.

THE AVERAGE WEATHER OF AUGUST.

By T. F. MANNING.

AUGUST closely resembles July in the principal weather phenomena, but there is an increase of fogs and a decrease in the number of thunderstorms, while, of course, the hours of daylight gradually diminish. On the whole it seems to be as good a flying month as July. But whether this particular August, following such a long spell of fine weather, will approximate to the average there is no saying. July averages one-fourth of the whole year's thunderstorms, and in and around London it is a month of heavy rainfall (next to October the heaviest of the year). We may therefore get a double share of rain and thunder in August.

From the 6th to the 10th there are usually a good many rain days, while the period from the 11th to the 18th is the finest part of the month. But half of all the rain days have only a very small fall of one-tenth of an inch or less, while only nine per cent. of them have records of half an inch and upwards.

August has the same small number of gales as July—89 in 100 years. The first week is one of the two calmest periods of the year, but towards the end of the month the gales increase, and the summer minimum (May to the end of August) comes to a close. The probable course of events may be seen from these figures, which give the percentages of the whole year's gales in the months June to September. June 4.4 per cent., July 5.4 per cent., August 5.6 per cent., September 6.6 per cent.

Thunder frequency is one fourth less than in July, but August is, nevertheless, a very thunderous month, having one-fifth of the whole year's storms. It may be noted that while July is the maximum month for England, August has the greatest number of thunderstorms in Monmouth and Wales. By the end of the third week (in England), the great thunder frequency abates, and while August has an average of two storms September is credited with only one.

Fogs begin to increase about the middle of the month. August has twice as many fogs as July. But they are still very rare, averaging only 1½ during the whole month, while a dense fog occurs only once in five years. When the temperature falls in September fogs will be multiplied three-fold.

Of snow there is none, June, July, August, and September, with most rare exceptions, being entirely free from that visitation in the south of England.

Hail is very infrequent, being at its absolute minimum in July and August. There is only one hail-storm in seven years.

The mean temperature goes down very slowly, and is almost the same during the first two weeks of August as in the last week of July. By the end of the month there is a fall of 2—3 degrees from the warmest days of July (15th and 16th). But very often we have a rather cold period from the 6th to the 11th, and a hot spell from the 12th to the 18th.

The following figures show the relative average weather of July and August, and as, in one or two respects, September brings a decided change for the worse, it may be of use to include the figures for that month. The numbers indicate the total of events occurring in a period of ten years:—

	July.	August.	September.
Ten years' gales ...	9	9	11½
„ fogs ...	6½	12	37
„ dense fogs ...	½	2	6½
„ thunderstorms ...	27½	21	10

The Belgian Aviation Circuit.

ALTHOUGH the entries for the Belgian National Circuit numbered 18, there were only 11 of them ready to start from Brussels on Sunday last, and of these only four actually got away from the Berchem flying ground. Vedrines at the last moment wired to say that he would be unable to take part. The quartette of starters were, Lanser on a Deperdussin monoplane, Tyck on a Blériot monoplane, Prevost also on a Deperdussin, and Parisot on a Farman biplane. The first day's stage was to Mons, with controls at Enghien, Nivelles, Chatelet, and Beaumont, the distance for the day being about 80 miles. Tabuteau, flying a Morane monoplane, was the first to get off the mark, but he was no sooner in the air than the machine fell, although the pilot fortunately escaped without hurt. Parisot was the next, and he rose in fine style at 10 minutes past five, followed by Tyck and Lanser, both of whom started some time after their official time. Tyck was the first to land at Enghien, followed closely by Lanser, and this was the order until the last control was passed in flight, when Lanser was in front. His time for the full distance is given as 2h. 40m. 27s., while Tyck, who was the only other one to complete the course during the day, was placed second, and credited with 3h. 12m. 41s. Parisot stopped at Fayt, where he had a hair-raising adventure. He was just preparing

Ten years' hail storms ...	1½	1½	1½
„ rain-days ...	124	129	123
Average rainfall (Greenwich) ...	2'40 in.	2'34 in.	2'15 in.
Mean temperature (Greenwich) ...	62.7	61.6	57.2
Hours of sunshine (Greenwich) ...	208	189	141
Degree of humidity (Greenwich)...	72.8	76.3	80.2

Table of Weather Phenomena in August.

The figures show the number of each event in one hundred years.

Day.	Gales.	Fogs.	Dense Fogs.	Hail.	Thun-der.	Rain Days.	Mean Temp.
1 ...	1	1	—	1	7	35	62.1
2 ...	1	2	1	1	11	43	62.1
3 ...	2	2	—	—	8	46	62.1
4 ...	2	3	1	—	7	43	62.2
5 ...	5	7	1	—	8	46	62.3
6 ...	1	4½	—	—	8	57	62.4
7 ...	2	3½	1	—	9	43	62.5
1st week ...	14	23	4	2	58	313	—
8 ...	4	1	—	—	7	54	62.5
9 ...	4	2	1	—	5	51	62.5
10 ...	3	2	—	—	9	46	62.5
11 ...	4	2	—	—	9	33	62.5
12 ...	2	2	—	—	8	37	62.5
13 ...	1	3	1	—	6	35	62.4
14 ...	1	1	1	1	6	41	62.3
2nd week ...	19	13	3	1	50	297	—
15 ...	4	2	1	1	7	46	62.1
16 ...	3	5	2	—	8	38	62.0
17 ...	2	4	1	1	9	40	61.8
18 ...	2	8	1	—	4	37	61.6
19 ...	1	3	—	—	10	46	61.4
20 ...	2	4½	1	—	5	48	61.3
21 ...	5	2	—	1	4	33	61.1
3rd week ...	19	28½	6	3	47	288	—
22 ...	5	6	1	1	6	37	61.0
23 ...	4	6	1	2	3	40	60.9
24 ...	3	8	2	—	8	44	60.8
25 ...	3	9	2	2	7	48	60.8
26 ...	1	3	—	1	6	41	60.8
27 ...	2	3	—	1	2	33	60.7
28 ...	5	6	1	1	1	44	60.6
4th week ...	23	41	7	8	33	287	—
29 ...	4	4	—	—	6	41	60.3
30 ...	4	7	1	1	5	32	60.1
31 ...	6	5	—	—	8	37	59.9

to get away again when a number of children ran in front of his machine, and it was only by wrecking his biplane that he was able to avoid disaster. Fortunately, he escaped personal injury, as also did the children. Prevost, who started later, got to Enghien, where he decided to stop for the day. On the following day two more completed the course, Crombez getting through on his Sommer monoplane in the elapsed time of 1h. 22m. 17s., and Lescarts, on a Farman biplane, whose time was recorded as 12h. 4m. 47s. During Monday several prizes were competed for at Mons, Lanser winning a race over 10 kiloms., and also another for a 20 kiloms. cross-country flight, in 16m. 13½s. Tyck won the height prize with 750 metres, while Lescarts secured the passenger prize.

On Tuesday the competition was resumed, and Lanser and Tyck started off on time for Tournai, the end of the second stage. Three others started later in the day, the number of arrivals at Mons having been increased to six by Contenet, on a Wright, and D'Hespel, on a Deperdussin, both of whom had completed the stage from Brussels to Mons in the early morning. Tyck and Lanser kept in close company until a few kilometres past Grammont, the last control, when Lanser was delayed by a broken propeller. Tyck and D'Hespel completed the stage without mishap. Crombez smashed his machine in starting, and Lescarts decided to postpone his departure as also did Contenet.

FROM THE BRITISH FLYING GROUNDS.

Royal Aero Club Flying Ground, Eastchurch.

A CONSIDERABLE amount of flying was done at Eastchurch during the past week; in addition to the naval officers, who did not miss a single opportunity of getting into the air, there were to be seen flying Mr. McClean, Lieut. Dunne and Prof. Huntington.

Mr. McClean was flying his favourite Short biplane, a machine on which he has done an aggregate of nearly 1,000 miles without any more serious breakage than a broken stay-wire. In spite of his long absence on a scientific expedition Mr. McClean has lost none of his old skill in flying, and put in some very nice work whilst he was up.

Lieut. Dunne, on his latest monoplane, made several circuits of the ground during the week, including some right- and left-hand turns which he executed with ease. These flights prove beyond a doubt that his machine must be reckoned amongst the practical flying machines of the day.

Prof. Huntington was also out practising on his biplane, on which he made a circuit of the aerodrome, keeping at a steady height of some 20 ft. and turning well at the corners.

On Tuesday and Wednesday afternoons Prince George and Prince Albert of Battenberg again visited the aerodrome, staying several hours on each occasion. The weather was all that could be desired for flying, and after witnessing some excellent flights by Lieuts. Samson, Longmore, Gerrard, and Gregory, the two Princes expressed a desire to go up. Prince George was the first to ascend, piloted by Lieut. Samson, who took his Royal passenger for a tour round the island on the Naval Short biplane at a height of some 500 or 600 ft., eventually returning to earth with a splendidly executed spiral *vol plané*, landing the machine as lightly as a feather.

Prince Albert followed in a similar flight, piloted by Lieut. Longmore. After witnessing further flying by Lieuts. Gerrard and Gregory on the new Short machines, and a trial flight by Lieut. Dunne on his monoplane, the two Princes motored back to Sheerness.

August Bank Holiday was by no means an ideal flying day owing to the high temperature causing upward trends and filling the atmosphere with lurking "air pockets."

The experienced aviator, however, mounted on a good machine, has no hesitation in buffeting with such difficulties, all of which can be overcome by careful practice. Consequently Lieut. Samson started out at 11 a.m. on a flight which lasted until lunch time, keeping the machine wonderfully steady in spite of the obviously disturbed state of the atmosphere.

Lieut. Longmore followed in the afternoon with several hours flying, and at the same time Mr. Travers, of Messrs. Short Bros.,

was also flying. The latter flies exceedingly well considering he has had but little experience, and he is evidently cut out for the work.

In the evening Lieut. Samson was again out, and made a splendid flight, which was watched with the greatest pleasure by the little band of holiday makers who had collected on the outskirts of the aerodrome. Rising quickly until his aneroid registered a height of 1,800 ft., he continued to hover at that altitude until it was growing dusk, when, stopping his engine, he descended the whole distance with a gradual *vol plané*, alighting very gracefully.

The Hon. Maurice Egerton was out in company with Lieut. Samson, both on Short machines, before 6 a.m. on Tuesday, and both flew until breakfast time. Mr. Egerton made quite an extended cross-country flight, passing over Eastchurch, Warden and Minster.

Brighton-Shoreham Aerodrome.

ON Tuesday last week Mr. Barber left about 8 a.m. with his lady passenger to return to Hendon. In his descent at Steyning, reported last week, it appears that no damage whatever was done to the chassis. It was simply a case of a buckled wheel, which was set right in a very short time.

The Metzgar-Leno machine made several experiments on the ground on Wednesday, but did not attempt to fly.

Mr. Valentine arrived in the evening of Thursday flying in the *Daily Mail* contest, thus winning the 100 guinea cup given by the Brighton Hotels Association to the first English aviator arriving here. He left again at 9.23 a.m. on Friday for the final stage to Brooklands. In the evening there was a dinner to French delegates from Dieppe sent over to discuss with the Directors of the Brighton-Shoreham Aerodrome the coming race from Shoreham to Dieppe.

On Saturday Mr. Cody arrived at 6.15, flying in the *Daily Mail* contest, having flown from Salisbury. After a short rest on the ground, he also left for Brooklands for his finish of the race.

The proposal to organise a flying race between Brighton and Dieppe has been well received in both places, and on Friday of last week two delegates from Dieppe visited Brighton in order to discuss the proposal. It was originally intended that the race should have taken place at the end of this week, but it has been decided to postpone it until September 2nd, and one suggestion is that there shall be one race from Brighton to Dieppe and another race from Dieppe to Brighton, substantial prizes being offered for each. Another idea, which seems to find most favour, is that the race should include the double crossing, starting from either side, with three prizes of £600, £200 and £100 respectively.

Brooklands Aerodrome.

ON Wednesday and Thursday of last week, out or respect to the late Mr. Napier, the Brooklands flag was at half-mast, and no flying was undertaken while his remains were still at the aerodrome.

Early on Friday morning Mr. Blondeau and his pupils, Mr. Longstaffe, Mr. Graham Wood, and Lieut. Gray, were out doing preliminary work on the school biplane. Mr. Spencer, on his biplane, was also out early making a fine flight out over Addlestone, Virginia Water, round by Byfleet, and home. News that Mr. Valentine had, during his circuit flight, broken down at Horsham, was received, Mr. Valentine soon after turning up himself on a car to fetch his mechanics and spares. Returning to his machine to replace wires that had snapped, he was eventually sighted flying at 1,500 ft., travelling to Brooklands at a good speed, arriving at about 6.50 p.m. Intense enthusiasm prevailed, and as first British aviator to finish the circuit, Mr. Valentine was chaired, photographed, cinematographed, and kept busy "autographing" for some time, taking it all with the greatest good-humour.

Mr. E. V. B. Fisher was out during the day on the Flanders monoplane, but experienced a little engine trouble; Mr. O. de Montalent took up a passenger in the Breguet biplane, and lastly Lieut. Watkins was out with the Vickers-R.E.P. monoplane.

Mr. S. F. Cody arrived on Saturday morning about 9.30, thus finishing the Circuit of Great Britain on the last day open, coming in unexpectedly on a gusty wind varying from 8 to 25 m.p.h. No officials were on the ground to time the arrival.

No flying work took place until 7.30 in the evening, when Mr. Chevalier got up on the Nieuport with a beautiful rising sweep at an angle of 35°, attaining 200 ft. in a few seconds, then circling the aerodrome at fine speed. Mr. Percival was at work on the Billing biplane, putting in straight flights, although the engine was not pulling so well as usual.

A strong gusty wind prevented flying on Sunday. In the "Blue Bird" Restaurant, however, Mr. Cody was keeping a company of aviators amused and interested with accounts of his flight, stating that "Beaumont," Vedrines, and Valentine had the



Mr. Walter Lawrence, another Bristol pupil who last week obtained his pilot's certificate at Salisbury Plain.

immense advantage of previous experience on the Continent to guide them in finding their way across country, and that he himself as far as Newcastle was considerably troubled to find his way, but as he proceeded this became less difficult, and the experience gained in the long flight was worth all the trouble taken to get round the full course.

Mr. Cody and Mr. Pixton resumed their battle for the Manville Prize on Bank Holiday. Mr. Cody got out early, and flew for 23 mins. Mr. Pixton made three preliminary flights of 8 mins. each, which, however, do not count under the regulations. Mr. Raynham took a turn in the air just to test the wind, and Mr. Cody was up a second time for the Manville Prize, flying low in his customary manner for 18 mins. After an hour's rest he made another similar flight, bringing him more into line with Mr. Pixton's total for this competition. Mr. Pixton afterwards was up again, but failed to stay. Eventually he got up by himself, and put in a flight of 26 mins. for the Brooklands Aggregate Prize. At the same time Mr. Raynham, on the Roe-Farman for the same competition, was in the air 9 mins., coming down by reason of the tricky wind. By this time the crowd from the motor meeting swarmed into the flying ground, and the wind abating some fine flights were seen. The Nieuport, Mr. Chevalier piloting, accomplished several speedy circuits, later taking passengers and travelling well. The Breguet biplane, with Mr. O. de Montalent as pilot and carrying a passenger, declared for altitude record, gradually working his way up in the blue sky until he appeared as but a speck. Upon descent his barograph registered 4,405 ft., a record height with passenger. Mr. Pixton and Mr. Raynham were putting in a full time, flying against each other for the Aggregate Prize, making a close fight of it, until the time limit for prize flying arrived. The prize of £50 fell to Pixton, whose time was 103 mins., Raynham being second with 90 mins., and Chevalier third with 45 mins. Then passenger flights were the order of the day. Mr. Pixton, on his Bristol, carried several for cross-country trips over Weybridge, including the Hon. Mrs. Cadogan. Mr. Raynham, on the Avro-Farman, and Mr. Johnstone, on the Howard Wright, were also very busy up till dusk, and the Flanders monoplane, with E. V. B. Fisher, was out doing straight flights.

The Blondeau School was again busy on Tuesday with passenger pupils, Messrs. Graham Wood, Longstaffe, and Lieut. Gray being carried for flights, Mr. Blondeau in the pilot's seat. Mrs. Hewlett was practising figures of eight with a view to *brevet* rank.

Mr. Noel, at the Avro School, qualified for his certificate on Tuesday, flying and landing to the satisfaction of the observers, Messrs. Ducrocq and C. Pashley. Mr. Raynham was out on the Avro-Farman, testing its lifting capacity with two passengers, and Mr. Johnstone was again flying on the Howard Wright. Mr. Henri Pequet, up on the Humber monoplane, made a good steady flight. At 7 o'clock in the evening Mr. S. F. Cody, after one turn of the aerodrome, took his leave of us and sped off to Farnborough in perfect weather. The Breguet biplane with passenger, again piloted by Mr. de Montalent, was once more a starter for altitude record in unusually good weather conditions. Mr. Raynham, on the Avro-Farman, in the meantime was flying well. Mr. Spencer, whose balloon experiences ought to stand him in good stead in aviation, was up on his biplane making rapidly improved flights and taking his machine along with rare dash. Mr. Pixton with his mechanic was in the air testing a new Gnome engine on the School Bristol. The Breguet all this time had been climbing higher and higher; on landing with a *vol plané*, lasting several minutes, the barograph registered 2,200 metres, or equal to about 7,200 ft. Mr. de Montalent thus broke his own record of the previous evening. Upon the announcement being made ringing cheers from the aviators and big crowd present rewarded the pilot for his successful essay.

Freshfield Aerodrome, near Liverpool.

ON Friday last week Mr. Higginbotham, who is now back again, accompanied by his mechanic, flew from the aerodrome to Ainsdale and around by Formby, returning by way of the aerodrome. He then made a figure-of-eight turn, and again flew towards Ainsdale. Later he attempted another figure-eight turn over the sea, where he found less buoyancy in the air. He was flying low at the time, when suddenly the air seemed to lose its sustaining power or he struck an air-pocket, for she dropped quickly and touched the water. Although the pilot used the elevator for all he was worth, the propeller caught the water and was smashed. Fortunately no great harm resulted beyond a wire striking Mr. Higginbotham's ear and cutting it, also bruising the mechanic's arm. Both swam ashore without difficulty, and the machine was presently hauled on shore with its broken propeller and damaged elevator. Mr. Higginbotham did not appear to be upset in the least by the episode and seemed as fearless in aviation as he used to be in the motor races, just smiling and remarking "One must be prepared for accidents in new ventures of this kind." He was at

the hangar on Saturday and made arrangements for repairing the elevator and hopes to be soon in the air again.

London Aerodrome, Collindale Avenue, Hendon.

GOOD flying was witnessed at Hendon on Bank Holiday in the presence of a crowd of approximately 2,000. Hubert commenced proceedings soon after three o'clock, but found the air in such a state of disturbance, owing to the great heat, that he descended after one circuit. Greswell flew two circuits on his Blériot soon after, but came down for the same reason.

As soon as the atmosphere cooled, and the "remous" became fewer and farther between, things freshened up considerably.

Hamel carried many passengers on the Blériot two-seater, among whom was Mr. H. Barber, the Valkyrie pilot. The latter, unfortunately, could not contribute to the evening's demonstration, owing to a disagreeable engine. Greswell flew his Blériot, and Hubert and Driver did exhibitions on one of Grahame-White's Farmans. Undoubtedly the flight that created the greatest amount of wonder among the spectators was that by "Farman on a Hubert biplane," as the megaphone man had it.

Valkyrie School.—Mr. Barber commenced his first "return to Brighton" flight with a passenger on Monday last week, a full account of which appears elsewhere in this issue. Capt. Loraine, of the Guards, had evidently so much enjoyed his passenger flight of the previous week that he became a pupil of the Valkyrie School on Wednesday.

Windy weather was responsible for little flying after Mr. Barber's return from Brighton on Wednesday morning until Sunday, when at 5 a.m. the inventor brought out the new military Type B passenger-carrying Valkyrie for trials. Mr. Barber first made a fine solo flight; so satisfied was he with the behaviour of the machine that he descended after only a few circuits of the aerodrome had been accomplished and invited Mr. Ridley-Prentice to occupy the passenger seat in order to test the weight-lifting propensities for which it is designed. A moderate but gusty wind was blowing, and with the fuel tanks quite full the machine rose with its passenger in a remarkably short space, attaining an altitude of 150 feet after only half a circuit had been made. A 15 minute flight ensued, but the gusts becoming very fierce, Mr. Barber deemed it advisable to descend, landing with a fine *vol plané* in front of the sheds. The tests proved in every way highly satisfactory, and all is in readiness for further cross-country flights already booked at the offices of the Aeronautical Syndicate, Ltd.

On Monday last Mr. Barber had an extended flight with Mr. G. Hamel on the two-seater Blériot, at an altitude of 2,000 ft., this being his first experience on any machine other than the Valkyrie.

Salisbury Plain.

ON Wednesday morning of last week Mr. Pizey returned to the Bristol school, and he as well as Messrs. Jullerot, Fleming, Busted, and Hotchkiss found plenty to do in giving instruction to pupils, who included Prof. Petavel, Mr. Pitman, Lieut. Beale Wright, Capt. Pitcher, Capt. Hoare, and Capt. Stewart. Prof. Petavel started off for his second straight run, and to the surprise of everybody rose to a height of 200 ft., and made a complete circle of about five miles, landing in splendid style. Col. Smeaton went for his *brevet*, and although the conditions were a little gusty the tests were satisfactorily made, Capt. Fulton and Lieut. Conner being the observers. Capt. Massy was out on a new Renault-engined Bristol military biplane, which has just been taken over by the Air Battalion, and in the evening the pupils at the Bristol school again put in a good deal of flying under the guidance of their instructors. They were also out early on the following morning, when some time was also spent in erecting new machines, while several officers of the Air Battalion were out. On Thursday morning Mr. Valentine arrived at Salisbury Plain on his Deperdussin about 11 o'clock in very rough weather, and Mr. Pizey, of the Bristol flying school, had the machine put into one of his hangars until Mr. Valentine was ready to continue later on in the day. He left for Brighton at 6.20 p.m., when a strong wind was blowing. The five instructors at the Bristol school spent some time, however, in giving passenger flights to their pupils. Capt. Fulton, Capt. Burke, Capt. Massy and Lieut. Conner were also flying. Lieut. Cammell is temporarily out of action, as his machine is under repair.

On Friday the officers of the Air Battalion were out early indulging in scouting practice over the plains. The Bristol pupils were also up betimes, and Col. Smeaton made a very pretty flight at an altitude of about 400 ft. Messrs. Pizey and Fleming gave each of the pupils a couple of instruction flights, while Pitman and Lieut. Beale Wright progressed as far as straight runs. Prof. Petavel rose to a height of 500 ft. and made two circles of about five miles each, and planed down in splendid style. This was only his third solo flight, while his passenger flights number about nine. Mr. Cody arrived during the morning from Exeter,

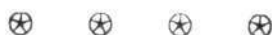
and intended to stay until the evening. He went up at twenty past seven, but after a trial circuit decided to postpone his departure till the following morning, and accepted the offer of the Bristol school to house his machine for the night. The weather was too rough for any work by the pupils, although Messrs. Pizey and Jullerot each made a short trip. On Saturday morning Mr. Cody was away at four o'clock for Brighton although a stiff wind was blowing which prevented any other flying being seen until the evening, when the Bristol pupils were out, the number including a new one, Mr. Gibson, who was taken for his first flight by Mr. Pizey. On Sunday morning M. Jullerot made an early flight, while Mr. Pizey was testing the Gnome engine of a new military extension Bristol biplane for the Air Battalion. On Monday morning Mr. Pizey made the official half-hour's flight with this machine, which was then handed over to the Air Battalion. Messrs. Jullerot and Busteed were busy teaching, and gave each of the pupils a couple of flights. In the evening, Sir George White and some friends visited the school, and witnessed some good flights by Messrs. Pizey, Jullerot, Fleming, Busteed, and Hotchkiss, each of

whom was accompanied by one of the pupils. Mr. Pizey took up Master Pitman, the eight-year-old son of Mr. Pitman, who is learning to fly at the Bristol school. Lieut. Beale Wright made a good trial, but on landing damaged the propeller and chassis. In all, some eighteen flights were made in the Bristol school, which ceased operations at dark. Several officers of the Air Battalion were also flying, Captain Fulton, among others, putting in some useful scouting practice. On Tuesday the morning was too misty for any flying. Captain Bertram Dickson, who is now looking much better, paid a visit to the Bristol school.

Southport Aerodrome.

OWING to high tides leaving the foreshore muddy, flying had been impossible for twelve days up to the 4th inst. Then, however, conditions were more favourable, and Mr. Gaunt made several pretty flights at a good height, and attempted a left-hand turn for the first time with his Alvastron engine.

On the 8th further flights were made, but a broken petrol pipe terminated experiments, Mr. Gaunt making a perfect landing after switching off on the first indication of this trouble.



THE "DAILY MAIL" CIRCUIT OF BRITAIN.

SATURDAY last was the closing date for the *Daily Mail* Circuit of Britain, and it saw the arrival of a fourth competitor at Brooklands, this being the persevering Mr. Cody, the only British competitor to complete the full course on a British built machine. The third arrival at Brooklands was that real British sportsman, Mr. Valentine on his Deperdussin, who arrived at Brooklands on the previous afternoon (Friday).

In our last issue we were able to chronicle the progress of these two competitors up to the arrival of Mr. Valentine at Exeter, and Mr. Cody at Bristol, on Wednesday week. Leaving Exeter at 26 minutes past 7 on the following morning, Valentine made a stop at Bruton, in Somerset, and then went on to Salisbury, arriving there at 10 o'clock. He left again at about 20 past 6 in the evening and reached the Shoreham Aerodrome a few minutes after half-past seven, having covered the 68 miles in 1 hr. 17 mins. He stayed at Shoreham for the night. The next morning he was away at 9.23 to complete the last stage to Brooklands, but landed at Warnham, a couple of miles past Horsham, and in doing so broke a stay-wire. He motored up to Brooklands and obtained the necessary materials for repair, and returning to his machine, put matters right. Starting off again he reached Brooklands at ten minutes to seven, being the first British competitor to complete the course of 1,010 miles, and so winning the 50 guinea prize offered by

the proprietor of Perrier Table Water. He had also won the £100 Gold Cup offered for the first Englishman to arrive at the Shoreham Aerodrome.

Mr. Cody left Bristol for Exeter at 25 minutes past seven on the morning of Thursday week, but after an hour he found the wind too strong, and decided to land on the sands at Weston-super-Mare. He stayed there for the night and got away early the next morning, arriving at Exeter at a quarter past five. He was in the air again at twenty minutes to seven, and reached Salisbury Plain without mishap. After resting there a little while the wind became very strong, so that his departure for Brighton had to be postponed till the next morning. On Saturday, however, he was up early, and left Salisbury Plain in fine style at 4 o'clock. He was at Brighton at a quarter past six, and after staying there a little over a couple of hours, left at 25 minutes past 8 on the last 40 miles to Brooklands. He made a very fast trip, so much so that there was no one present to time him officially, arriving at the aerodrome at about 9.30.

An Echo of the Circuit.

As a modest expression of his great gratitude to England, where he has received such a generous and cordial welcome, Lieut. J. Conneau ("Andre Beaumont") has sent a cheque for £100 to the Lord Mayor of London for charitable work in London.



AVIATORS CROSSING THE CHANNEL BY BOAT.—This photograph was taken on the journey from Calais recently, when during the "rest" at Calais in the European Circuit, several of the competitors crossed over to witness the Gordon-Bennett race at Eastchurch. Mr. Holt Thomas, who sends us the photo from M. Simon, of *La Vie au Grand Air*, is standing in front sideways. To left and right respectively are Lieut. Conneau ("Beaumont") and M. Deutsch de la Meurthe, whilst others easily recognisable in the group are MM. Garros, Audemars, Vedrines, Séguin (inventor of the Gnome engine), Harry Delacombe, &c.

BRITISH NOTES OF THE WEEK.

London to Paris With One Stop.

IN accordance with his announced intention, Jules Vedrines started off from Hendon on the 4th inst. to fly his Morane machine back to Issy, and incidentally carry a letter from the editor of the *Daily Mail* to the editor of the *Continental Daily Mail*. Leaving Hendon at six o'clock in the morning, he made a non-stop flight to Dieppe as pre-arranged, where he landed at 8.35, having crossed the Channel between Folkestone and Boulogne. From London he made for Brighton, and although the fog bothered him a good deal, his compass stood him in good stead, and enabled him to find his way. In the afternoon a large crowd visited the flying ground at Dieppe, and witnessed several flights by Vedrines. He left at five minutes past six, and an hour and a quarter later landed safely at Issy.

By way of reminder it will be recalled that on April 12th last Prier, on a Blériot, flew from Hendon to Issy without a stop in 3 hrs. 56 mins.

A British Lieut.-Colonel Takes His "Brevet."

LAST week Lieut.-Colonel C. O. Smeaton, R.A., passed all the necessary tests to qualify for his pilot's certificate, following a course of instruction at the Bristol School on Salisbury Plain. Col. Smeaton was officially observed by Capt. Fulton and Lieut. Conner. We reproduce a photograph of Col. Smeaton, who can claim, we think, that he is the only British officer of his rank in the Army to have obtained a certificate, whilst no officer of corresponding rank (Commander) in the Navy has so far qualified for the *brevet*. Lieut.-Col. Smeaton is the Commander of the Siege Artillery Brigade, which is stationed at Lydd just now awaiting the commencement of the British Army Manœuvres in September. Lieut.-Col. Smeaton hopes to attend this on a Bristol biplane, the machine upon which he acquired his certificate.

Flying by Compass above the Clouds.

A VERY fine flight was made by Mr. Graham Gilmour on Monday last, when he flew from Filton, near Bristol, to Sherborne on his Bristol biplane. Leaving Filton at 25 minutes past six, he rose to a height of 2,700 ft., so that he was above a bank of clouds, which completely obscured the landmarks. He, however, had complete faith in his compass and went on, reaching Sherborne at a quarter past eight, having covered the 50 miles in an hour and 50 minutes. His slow speed may be accounted for in large measure by the very gusty winds. On his arrival he was given a very enthusiastic reception, and in the evening he executed a series of exhibition flights, which greatly pleased the Bank Holiday crowd which had assembled.

An Aerial Mail in England.

THERE is prospect of very useful results accruing from the arrangements which are being made with the G.P.O. to carry mails for a few days between London and Windsor by aeroplane. This demonstration should show in a telling manner the utility of the aeroplane for this sort of work in places less happily situated as regards communication than London and Windsor. It is proposed that the service should be on the lines of that successfully carried out at the Allahabad Exhibition, and the proceeds will be devoted to charitable purposes. The special posting boxes will be put up in certain places, such as the big stores in London, and on being collected, the letters will be sent to Hendon, the stamps being obliterated by a special aerial post stamp. The mail bag will then be strapped on an aeroplane, and transported by way of the air to Windsor, where permission has been given by the King for landings to be made in the Royal Park.

The Valkyrie in Cross-Country Work.

MR. H. BARBER, of Valkyrie fame, has done a good deal of cross-country flying lately with passengers, and, curious to note, mainly members of the fair sex. He is undoubtedly adopting a very wise course, as prearranged town to town trips of this nature demonstrate the value of the machine both from a military and sporting standpoint to a much greater extent than mere aerodrome flying.

It certainly looks as though cross-country passenger flights will soon form a considerable source of income to those firms who are in a position to cater for them, for Mr. Barber hints that he has arranged several long town to town "joy flights" for the near future, while a certain enthusiast is negotiating for a passenger trip to the Continent. It is evident that traffic services by aeroplane between large towns will be an accomplished fact before many seasons have passed.

Aeroplanes for Ventnor Week.

IN connection with Ventnor week, which is to be held under the patronage of Princess Henry of Battenberg from the 14th to

the 19th inst., one of the special features will be a series of flying exhibitions on Bristol machines.

Mr. Morison flies at Huntingdon.

ONE of the best flights yet seen at Huntingdon was made on Monday of last week, when Mr. O. C. Morison paid a visit to the Portholme aviation ground. During a trip of about seven minutes, Mr. Morison steered his monoplane outside the aerodrome in the direction of Godmanchester, and finally came down by a well-judged *vol plané*.

A Blackburn at Taunton.

ON Monday Mr. B. C. Hucks made one or two very fine exhibition flights on his Blackburn monoplane, greatly to the delight of the large holiday crowd which had gathered to witness them.

A Blériot at Southport.

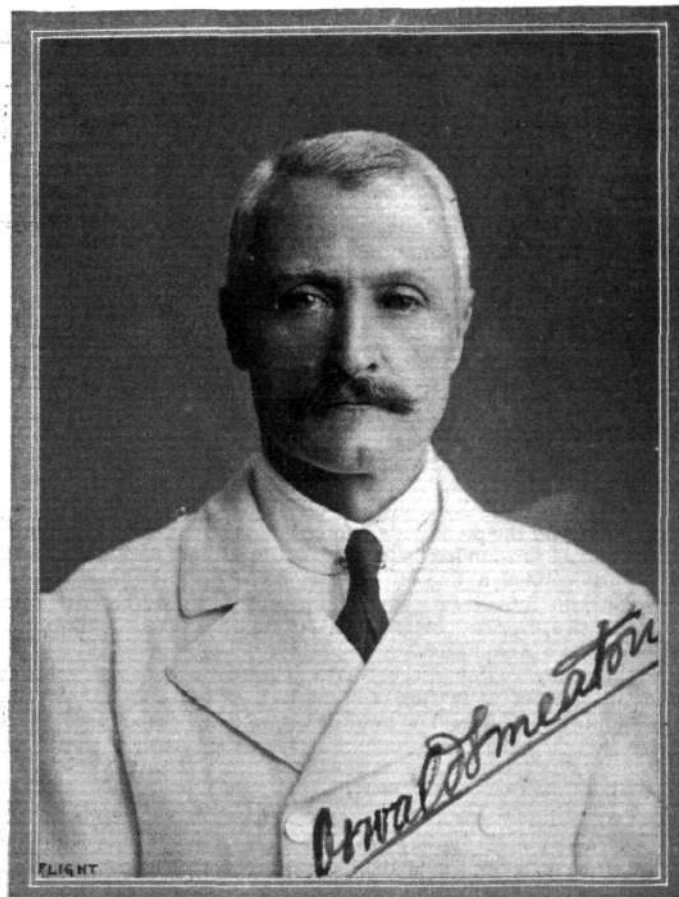
CLEMENT GRESWELL has returned to Southport, where he is continuing his exhibition flights on a Blériot monoplane over next week end.

The Deperdussin Machines.

IN view of the success of Valentine in securing third place in the *Daily Mail* Circuit of Britain, attention may well be drawn to the Deperdussin machine which he was using. This was not by any means a new machine, as it had previously been all round the European Circuit, and so has at the present time well over 2,000 miles to its credit. This is sufficient testimony to the workmanship and design of this machine, on one of which Lanser is putting up such a good record in the Belgian National Circuit, as recorded elsewhere. We hope to give a full description of this machine in our next issue.

A Hydro-Aeroplane at Barrow.

BARROW is not so completely taken up with the naval airship as to ignore the heavier-than-air type of craft, and on Thursday of last week some interesting experiments were made with the Roe



Lieut.-Col. C. O. Smeaton, R.A., a pupil at the Bristol Flying School, Salisbury Plain, who has just qualified for his pilot's certificate. Lieut.-Col. Smeaton hopes to attend the British Army manœuvres in September on a Bristol biplane.

biplane which was recently purchased by Commander Schwann and fitted with a couple of floats. No attempt was made to get the machine in the air, but both Commander Schwann and Lieut. Boothby made trials with it, the former contenting himself with a straight run, while Lieut. Boothby made a circular trip on the surface of the Cavendish Dock. On Wednesday during some tests with the floats reversed the machine capsized but the pilot escaped with a ducking.

Trial Flights with "Gamma."

VERY early in the morning of Wednesday last week the Army dirigible "Gamma" was brought out of its shed, and with Lieut. C. M. Waterlow in charge, and Capt. E. M. Maitland, Lieut. T. Ridge, and a mechanic on board, it cruised for some considerable time over Aldershot Camp and district at heights ranging up to 1,000 ft. The alterations which have been carried out during the process of overhauling appear to be giving every satisfaction.

"Art of Aviation."

MESSRS. CROSBY LOCKWOOD AND SON have just published a second and revised up-to-date edition of Mr. Robert W. A. Brewer's "Art of Aviation."

A Model Competition at Bath.

SHOULD the weather permit, it is proposed to hold a model aeroplane competition in Bath on Saturday, September 2nd, at half-past three. Some ten different classes have been arranged, and the entry fee has been fixed at 3d. per model. It is hoped to offer some small prizes, but this will depend upon the amount of support received. All likely competitors are asked to communicate with Mr. S. H. Baker, 11, Elm Place, Bloomfield Road, Bath.



"LONDON BRIGHTON RETURN" BY AEROPLANE.

ON Sunday evening of last week Miss Trehawke Davies booked a return ticket between Hendon and Brighton at the Hendon offices of the Aeronautical Syndicate, Ltd., suggesting that the flight should commence at 6 o'clock next morning. Previously, Miss Davies had made several less important cross-country flights on a Valkyrie monoplane, and we believe it is the first occasion on which a passenger has booked a return aeroplane passage to Brighton.

On Monday at 5.55 a.m. Mr. Barber took out the 50-h.p. Gnome-Valkyrie racer and in a slight breeze ascended with his passenger; making only two circuits of the aerodrome, he quickly attained an altitude of 500 ft., and punctually at six o'clock passed over the boundary of the flying ground in the direction of Brighton. Before reaching Harrow the wind had considerably increased from the south, and half an hour passed before the aviators arrived over Brooklands track at an altitude of 1,500 ft. Owing to the strong head wind Mr. Barber deemed it advisable to descend there in order to replenish the petrol tanks. Cutting off his engine he made a long spiral *vol plané*, passing close to a swift Nieuport machine, and landed close to a group of Brooklands enthusiasts. In ten minutes the fuel tanks were replenished, and assisted by friendly aviators and mechanics he was once more on the wing heading for Shoreham. An altitude of 1,400 ft. was maintained; higher up the wind was found to be very strong, the barometer registering drops of 100 ft. in a few seconds. When in sight of Lancing College and Shoreham Aerodrome the petrol supply was exhausted owing to the strong head wind, and the pilot made a forced descent near Steyning in a four-acre field surrounded by trees. To ascend from such a restricted space necessitated a fine effort of airmanship, which Mr. Barber negotiated in the evening, flying through a gap in the trees with only 3 ft. to spare, and in five minutes he landed at the Brighton and Shoreham Aerodrome.

On Tuesday morning the return journey was commenced at 7.56, in spite of a twenty mile an hour wind. At an altitude of 1,000 ft. the aviators flew into the clouds; and the wind increased

Army and Navy and Aviation.

DISAPPOINTING as was Col. Seely's recent statement in the House of Commons as to the Government's policy regarding aviation, still more so were his replies to some questions asked by Sir J. Lonsdale and Mr. Lee in the House last week. No great expense, he stated, is likely to be incurred in the near future in the purchase of aeroplanes, though some will have to be bought. The recent demonstrations had attracted the attention of the War Office, and it is certainly necessary to add to the number now in possession of the Army, but as to how many or when no general statement could be made, as the matter was still under consideration.

Mr. McKenna was also tackled as to recent experiments conducted in France with regard to the detection of submarines by observers in aeroplanes and communication between aeroplanes and battleships by wireless telegraphy. The Admiralty only had the information which had appeared in the Press on the subject, which is not over much. With regard to the training of officers as aviators for scouting and offensive purposes apparently the information is a little more up-to-date, as Mr. McKenna was actually able to report the completion of the four officers' six months' course of instruction at Eastchurch. Really, there is still some hope that the Government will be themselves presently, as he continued that the question of commencing another course is now under the consideration of the Board. The training so far given has been of a general nature only. This just leaves us wondering what the official interpretation of "general nature" is. In reply to a question as to the desirability of making a large increase in the number of officers trained as aviators, following the good example of the War Office, Mr. McKenna said the Navy's requirements were not the same as those of the War Office, but the question of the requirements of the service was being considered.

to over 35 miles per hour. This was evident from the fact that in only ten minutes the Valkyrie was over Horsham. Mr. Barber descended on the Golf Links, 1½ miles north of Horsham, alighting at 8.7 a.m., exactly 11 minutes after leaving Shoreham, having travelled at a speed of about 95 miles per hour. Immense interest was shown by thousands of people from the surrounding country.

Half a gale of wind blew all day, and it only calmed down towards 8 p.m., when Mr. Barber decided to put up a demonstration. A charge of 6d. and 3d. was made, and some 6,000 people availed themselves of this opportunity of examining the aeroplane, and witnessing a magnificent flight at an altitude of 2,000 ft. The entire proceeds were given to the local Cottage Hospital. Mr. Barber and his passenger were most hospitably entertained by Mr. C. J. Lucas, of Warnham Court. At dawn on Wednesday, Mr. Barber flew his machine from the Golf Links to Warnham Court, and alighted on the lawns immediately in front of the house to pick up his passenger. Thus Miss Davies suffered no more inconvenience than had her motor driven up to the front door. Once more a thrilling ascent was successfully accomplished, sharp right and left hand turns being necessary to pass between the trees. Clouds were flying low, and a fresh breeze sprang up, but Mr. Barber flew with steadiness, although unable to ascend to a greater altitude than 800 ft. owing to the mist. In spite of the adverse conditions, Mr. Barber made a fine non-stop flight to Hendon, arriving at 6.10 a.m.

On alighting Miss Davies was more enthusiastic than ever. The greater part of the trip had been made in a high wind, but, nothing daunted, Miss Davies expressed her desire to make a Continental tour on the Valkyrie machine. So much mist was encountered on the journey that Mr. Barber had to rely almost entirely on his Clift compass, which carried him on the direct route throughout. We believe that Miss Trehawke Davies has created an English lady-passenger record by having accomplished this London-Brighton return journey by aeroplane.

Height Record Again Beaten.

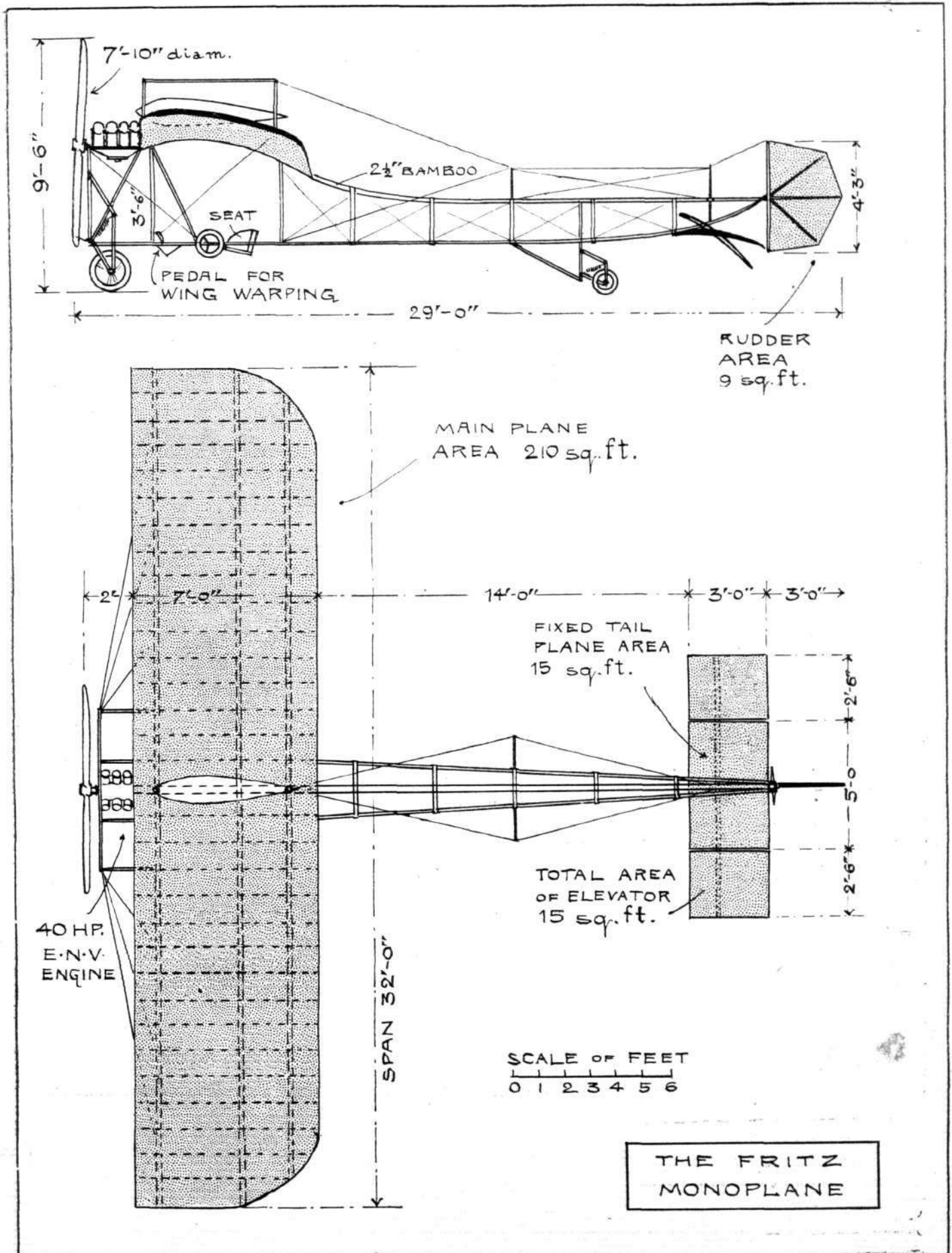
THE altitude record has not long stood to the credit of M. Lorian and the Henry Farman type of machine, for on Saturday morning Capt. Felix on a Blériot machine, at Etampes, during a flight of 1 hr. 15 mins. duration, reached 3,490 metres (10,990 ft.) according to his barograph. He came down by a *vol plané* in 12½ mins. A Chauviere propeller and Gnome motor were fitted to the machine. By way of practice, Capt. Felix on the previous day made two high flights, on one occasion rising to 1,500 metres and the second time to 2,500 metres. Lorian's record was 3,200 metres, which beat Legagneux's Blériot record of 3,100 metres.

Incidentally, the flight furnished some interesting data regarding

the way in which progress becomes slower the higher the altitude reached. Approximately, during the first quarter of an hour Capt. Felix climbed 1,250 metres, in the next fifteen minutes he rose 1,170 metres, the third quarter of an hour saw him 600 metres higher, while after taking a further fifteen minutes to rise 470 metres, the elevator appeared to have no further appreciable raising effect.

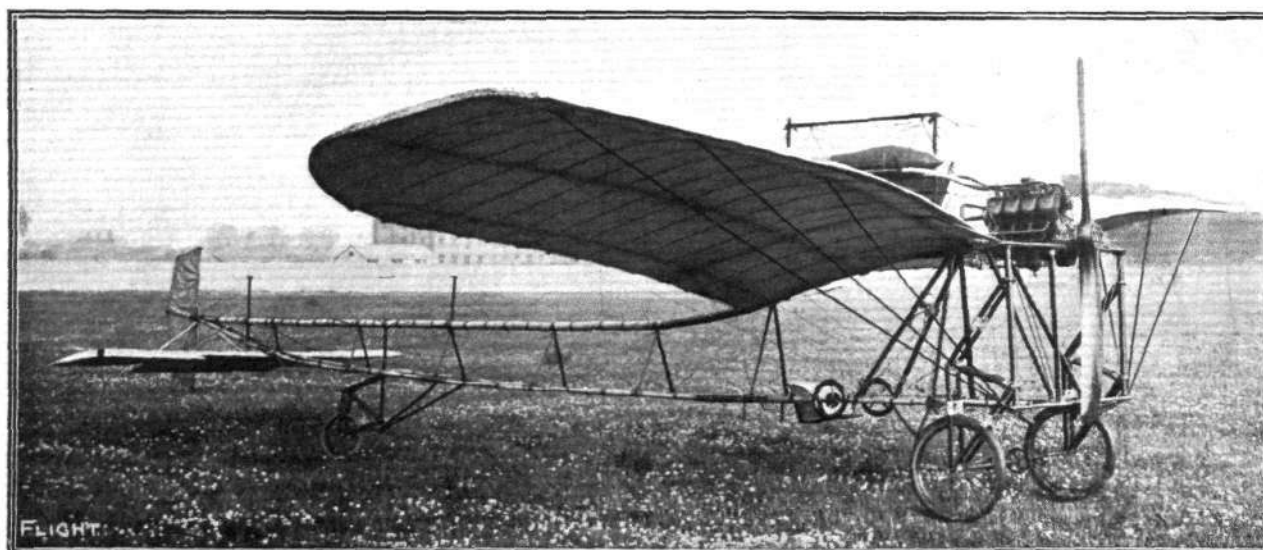
New Passenger Speed Records.

THE following passenger speed records made by Level on his Savary biplane at Chartres have now been officially passed in France:—Distance and duration—241.79 kiloms. in 3h. 13m. 35s. Time—2 hours, 151 kiloms.; 3 hours, 224.85 kiloms. Distance—200 kiloms. in 2h. 38m. 26s.



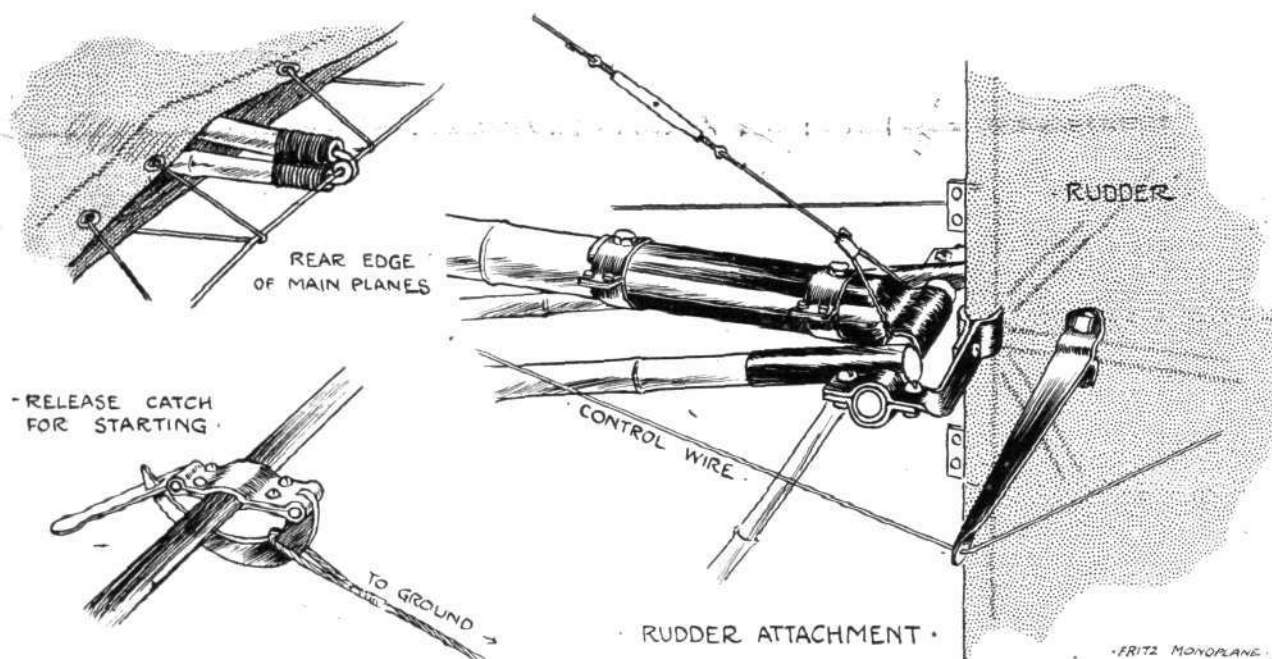
THE FRITZ MONOPLANE.—Plan and elevation to scale.

"Flight" Copyright.



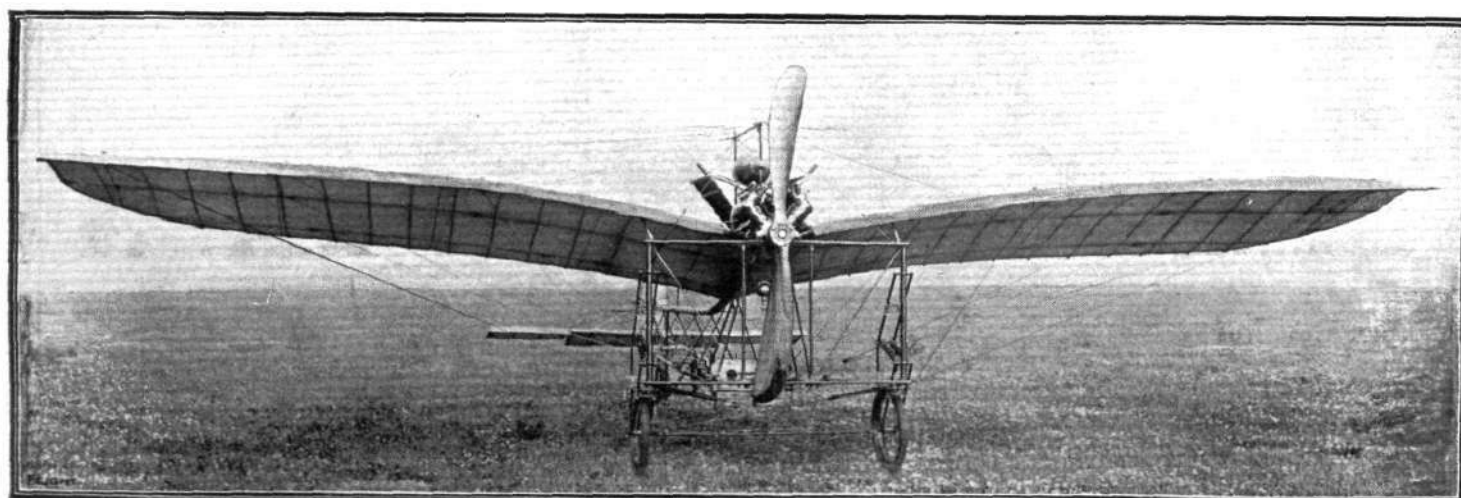
Side view of the Fritz monoplane.

"Flight" Copyright.



Sketches illustrating some constructional details of the Fritz monoplane. Above, on the left, is seen the method of lacing the Pegamoid fabric to the trailing edge of the wings. Beneath is a little releasing catch intended to enable the pilot to dispense with assistance when starting. On the right is shown the method of mounting the rudder to the tail end of the bamboo frame.

"Flight" Copyright.



Front view of the Fritz monoplane, built by Messrs. Oylers, Ltd.

"Flight" Copyright.

THE FRITZ MONOPLANE.

AN all-British machine that has recently been constructed by Messrs. Oylers, Ltd., of 35, New Cavendish Street, London, W., to the designs of Mr. Fritz Goetze, is illustrated by the accompanying photographs and drawings. It calls to mind in some respects the *Demoiselle* of Santos Dumont fame, for it is of the light spidery variety albeit of much more substantial construction with regard to the under-carriage. It has, too, somewhat the same system of control, which includes pedals for wing warping and rotating hand wheels on either side of the pilot's seat for operating the elevator and the rudder. The main frame of the machine consists of three bamboo spars trussed by light steel triangular frames forming struts, and the usual system of diagonal wires. In the wings, there are also three spars, which are likewise of bamboo. The two principal spars therein have a diameter 2 ins. while that near the trailing edge has a diameter of 1 in. The largest spar in the body has a diameter of

2½ ins. and is in one piece 24 ft. long. The ribs of the wings are of bamboo and pegamoid is employed for covering the planes, which are double surfaced. An aluminium leading edge is introduced to give stiffness to the front of the wing and a steel wire is carried round the trailing extremities of the wing over which the surfacing fabric is laced.

The under-carriage resembles in its outline the Blériot system, and consists of a pair of neatly designed hinged diamond frames carrying the two landing wheels, which are braced together by a light steel axle that is itself reinforced by a disc in the centre, over which a series of steel wires are stretched between the extremities of the axle tube. The power plant includes a 40-h.p. E.N.V. engine direct coupled to a 7 ft. 10 in. propeller. The engine is located wholly in front of the wings and the propeller-shaft is practically in line with the chord at this point. The pilot's seat is under the wings.



"AN IRRESPONSIBLE LAW CONGRESS."

Apropos a leading article which appeared in a recent issue of FLIGHT, we have received a letter which almost explains itself, from Mr. Edward S. M. Perowne, who describes himself "Vice-Président Extérieur of the Comité, Directeur and Hon. Sec. of the British Section of the Comité Juridique International de l'Aviation." All we can say is that Mr. Perowne's letter leaves us of the same opinions as those we expressed in our article to which he takes exception. Indeed, we are almost inclined to think, after perusing the letter and the "Statement" of the aims and objects of the International Legal Committee of Aviation, that this body is even more superfluous than our article would convey. The Committee appears to be far more French in its constitution than it is International, and in its latter aspect it certainly seems to aim at overlapping the functions of existing bodies. The following is the text of Mr. Perowne's communication:—

"July 11th, 1911.

"I have just returned from Paris where my attention has been called to the article headed 'An Irresponsible Law Congress' in your issue of the 17th ultimo.

"The writer of the article has apparently four points against the Congress.

- "1. That it was not official.
- "2. That it did not include technical experts in aviation.
- "3. That it had no recognition from the Royal Aero Club.
- "4. That it was useless.

"On these several points I would like to make the following observations:—

"The Congress in question was a Congress of an International Committee known as the Comité Juridique International de l'Aviation, formed in December, 1909, and of which the writer of the article never appears to have heard; hence the general ignorance of the subject which he has exhibited.

"It is the more extraordinary, as one of the members of our British Section of this Committee is one of the foremost members of the Royal Aero Club, whose official organ your journal is.

"For your better information I enclose a copy of a statement I had printed in November last for the members of our British section, which will give you the aims and objects of the International Committee and the lines upon which it is worked.

"The Comité makes an express point that it is not official, because a private character is indispensable in order to enable it to arrive at a useful result.

"If the Comité were to include official representatives of Governments it would inevitably be drawn into a political rather than a legal work. On the other hand it would be difficult, owing to the divergence in views of the different States towards aerial locomotion, to find some common ground upon which to base articles for an international code.

"The inconveniences attaching to an official organisation in this matter were clearly shown at the International Conference of Aerial Navigation held in Paris in May, 1910, which had to be dissolved without coming to any conclusion.

"I may add that so far from 'keeping these material facts in the background' (*i.e.*, as to the non-official character of the Congress) as stated by your correspondent, Mr. Millerand, in his opening speech at the Congress, laid stress on this very point in the following words. I translate from a report in the *Journal des Debats* of June 1st, 1911 (a copy of which I enclose):—

"No doubt when it is a question of making international laws in a matter so new and exposed to such sudden transformations, it is as well to advance with prudence and circumspection. But it is just here that the original and distinctive mark of your work shows itself. The Comité Juridique International de l'Aviation is a private

undertaking; it is jealously tenacious of remaining so. It is right. In these questions where official delegates of Governments would have the right and duty to hesitate, you can go forward without scruple. You only involve yourselves. Your resolutions do not risk creating any diplomatic complication. You are, so to speak, the free-shooters of the international aerial law.'

"You will, therefore, I am sure agree that there is no excuse for the Press at large to be 'labouring under the delusion' to which the article refers.

"2. A reference to my statement will show that there is attached to the Comité a Technical Consultative Commission in each country which includes persons whom, I think, even the writer of the article would not dispute as being authorities, such as for example:—

"In France—Messrs. Blériot, Bréguet, Commandant Renard, Painlevé, Armingaud, &c.

"In Germany—Messrs. Conrad von Frankenberg, Hildebrand, Martin; and in England—Messrs. Moore-Brabazon, G. V. Roe, C. C. Turner, and S. A. Marples, all of which four latter gentlemen I myself asked to become members of the Technical Commission attached to the British Section of the Comité, and obtained their consent. These were all invited to the Congress.

"In this connection I again quote from Mr. Millerand's opening speech at the Congress when he said:—'A Technical Consultative Commission lends you the enlightened co-operation of competent specialists indispensable for the examination of questions so particular.'

"3. In reply to this observation it suffices to say that at the time of the Paris Congress all the sporting societies of French aeronautics were represented at the Congress, and in particular La Ligue Nationale Aérienne, l'Aéro Club de France, l'Automobile Club de France, La Chambre Syndicale des Industries Aeronautiques, and l'Aéronautique Club. These associations have sufficiently shown their interest in the work undertaken by the Congress by delegating to the Congress members specially authorised, and thus it was that La Ligue Nationale Aérienne and l'Aéro Club de France were each represented by the president of their legal committee.

"If, therefore, the Royal Aero Club here thought proper to hold aloof, its attitude has not been followed in France at least; but I ought to point out that though we have members of the British section of the Comité who represent both the Royal Aero Club and the Aerial League (both of which associations accordingly know of our work) I did not when sending out notices of the Congress send any formal invitation to either of these bodies.

"4. I again refer to Mr. Millerand's speech to show that the work which we have undertaken is not useless. Even if the Comité is not official it contains at any rate among its members several official representatives of certain Governments in official commissions. Consequently one may be sure that the views put forward at the Congress will have their influence when these official representatives are called upon to give their opinion upon any decision which their Government may wish to take.

"In this connection Mr. Millerand said:—'By your initiative you are preparing the way where, behind you, will penetrate official conferences benefiting from your efforts. You do not satisfy yourselves with preparing by your local Committees of Doctrine the drafts, of which will be made to-morrow national legislations and the International law of the air. The "Révue Juridique International de la Locomotion Aérienne" publishes every month with the growing jurisprudence your studies and your works.'

"May I say in conclusion that one regrets to see friends of aviation decrying the work of the Committee, one of whose aims is to defend the interests of aviation in the legal world, and so perhaps assist in modifying any existing jurisprudence adverse thereto."

FOREIGN AVIATION NEWS.

Renaux Tries for the Coupe Michelin.

FLYING over a course between St. Cyr and Chartres, Renaux, on a Renault engined Maurice Farman biplane, made an attempt to beat Lorian's recent effort. He started at three o'clock in the morning on the 7th inst., and made good progress until mid-day. The heat then began to worry him, and it also affected parts of the coverings of the planes. After he had been flying for 12 hrs. 12 mins. he had to land suddenly, through part of this material coming adrift, with the result that the lower plane was damaged. He had then covered 690 kiloms., 12 kiloms. short of Lorian's record.

Vedrine Stopped by Rain.

VEDRINE was to have made an attempt for the Michelin Cup on the 2nd inst. over a course from Lhumery, close by Etampes, to Gidy, about 8 kiloms. short of Orleans, but heavy rain rendered a postponement necessary. He hoped to cover 600 kiloms. without a stop, and to make his record something over 1,000 kiloms.

Replenishing Fuel Tank While Flying.

AN interesting experiment was made by Maurice Prevost while flying on his Deperdussin monoplane from Marais, near Compiègne, to Rheims, the other day. While above Laon, fearing the petrol tank was nearly empty, he asked his passenger, M. Colombel, to replenish it with a spare tin of petrol. This was successfully carried out, and the flyers were thereby able to reach Betheny without it being necessary to make a landing.

A New Sommer Monoplane.

ON the 5th inst. M. Sommer at Douzy commenced some trials with a new monoplane designed with a view to increased speed and improved stability under windy conditions. It is fitted with a 50-h.p. engine, and on its first trial climbed 500 metres in 6 minutes. Further tests are to be carried out at Chalons.

One or Two Seats for Military Machines?

ACCORDING to the Paris *Journal*, experiments are to be carried out during the forthcoming French Army Manœuvres with a view to discovering whether one or two seated aeroplanes are most satisfactory from a military point of view. It is stated that one army corps will have attached to it only single seated machines, while another will have two seaters.

The Blériot Military School at Etampes.

By way of keeping his hand in, Capt. Marie, who is now on the staff of the Inspector-General of Aeronautics, was flying last week for an hour across country in the neighbourhood of Etampes. Capt. Felix is in charge of the Blériot military school at Etampes and the ten pupils under his charge are making excellent progress.

Further Trials with "Le Temps."

ON the 3rd inst., the Zodiac dirigible "Le Temps" made a course over a circuit embracing St. Cyr, Buc, Gif, Forges les Bains, Limouss, Voisins le Bretonneaux, being in the air for 2 hrs. 20 mins. The dirigible had four persons on board and it is interesting to note that it had then been inflated for 47 days, but in addition to the passengers its load included sufficient oil and petrol for five hours, 4 cans of water each holding 2.5 litres and 225 kilogs. of ballast, not to mention spare parts, &c.

Long Flights at Buc.

ON the 3rd inst. at the Farman school at Buc, Lieut. Noe was flying for an hour at a height of 500 metres, while Capt. Bares was up for a couple of hours. On the following day Fourny, on his machine entered for the Ae.C.F. Grand Prix, was making some trials. The fuel tank has a capacity of 500 litres.

Orleans to Issy.

LEAVING Orleans on the 4th, the new Morane pilot Henri Roger, who is not yet eighteen years old, landed after a flight of 53 mins. in some private property at Fontenay, a few kilometres from Issy.

Aviation and Submarines.

THE experiments carried out by Aubrun in connection with the submarine manœuvres at Cherbourg would appear to have been very successful. Flying on his Deperdussin monoplane at a height of 400 metres, he succeeded in locating three of the submarines, the black masses of which showed up plainly beneath the surface of the sea.

M. Blériot's Recreation.

EVEN in his recreative moments M. Blériot is unable to escape from the fascination of utilising the wind, and in the vicinity of his country house at Hardelot he is constantly to be seen enjoying a spin along the sands on his air yacht. It is seldom, however, that he is alone, for Madame Blériot and the quintette of children are also fond of a sail along the beach.

How France does it.

IN order that the French Army may have no lack of properly qualified pilots, arrangements have now been made whereby civilian aviators may obtain without cost the superior military certificate, for which it is necessary to make three round trips of 100 kiloms. All the aviator has to do is to apply at the nearest military aviation school, when the observers will be appointed; while if he is not near a school he must apply to Gen. Roques, who will nominate two officers to observe the flights. On obtaining the certificate, the aviator will be at once attached to the corps of *sapeurs aëroliers*.



Benno König, the winner.



Hans Vollmoller, the second in the race.

THE GERMAN AVIATION CIRCUIT.

A New French Military School.

FEELING that it is not fitting that they should be behind the other important military centres, the municipal authorities of Bourges have voted £12,000 towards the cost of laying out a military flying ground at the Avor Camp. The work is to be put in hand at once.

Aviation in French Colonies.

TWO monoplanes have arrived at Tananarivo, where experiments are being carried out on the Androhibe plateau. A sum of £4,000 has been set aside for paying the initial expenses in connection with hangars, workshops, &c., for military aviation in Madagascar.

More Breguets for French Army.

ON the 2nd inst., Moineau, who is in charge of the trials department of the Breguet firm, carried out successful trials with three new Renault-engined machines, each of the three-seated type. They attained an altitude of 350 metres in seven minutes, carried a useful load of 300 kilogs., while the speed averaged 90 k.p.h.

Molon at Havre.

ON the morning of the 2nd inst., Molon on his monoplane flew over the circuit Bleville, Octeville, Criquetot, Harfleur and Havre in 35 mins. His average height was 1,500 metres. He was flying over Havre for an hour on the 4th inst., and on the 7th visited Colmoulin for lunch, and returned later in the day *en aeroplane*.

Lieut. Malherbe Lost in a Fog.

SETTING out from Saumur on his Blériot monoplane, to fly to Angers, Lieut. Malherbe, owing to fog, flew past his destination, and on realising this turned back, but without finding his way. He landed at Audard, about 10 kiloms. from Angers, and with the assistance of peasants was able to make a re-start, and eventually reached Angers. Leaving Angers on the 5th to fly to Etampes, *via* Pont Leroy, Lieut. Malherbe was forced by wind to land at Saumur. On the next day he got to Etampes, covering the 215 kiloms. in 2 hrs. 15 mins.

The De Dion Biplane.

THE latest De Dion biplane has just made its appearance in the open and created a good deal of interest in French aeronautical circles, chiefly by reason of its large size and massive construction. In general appearance, as will be gathered from our photograph, the machine resembles the Henry Farman type of machine, while the main beams running fore and aft are reminiscent of the Paulhan design. Two four-bladed propellers are driven by chains from a 100-h.p. 8-cylinder V-type De Dion engine, and a tubular radiator is fitted in front of the driver's seat. The span of the main planes is 20 metres and the surface 100 sq. metres, while the weight is given as 1,200 kilogs. The trials are to be conducted by Champel, who, it will be remembered, was at the Lanark meeting with a Voisin machine last year.

From Land to Water and Back Again.

THE new "amphibious" canard-type Voisin appears to be giving very satisfactory results. With Colliex at the wheel, on the 3rd inst., it rose from the ground at Issy, and coming down to the

surface of the Seine skimmed along for a short distance between the Auteuil Viaduct and the Billancourt Bridge, afterwards rising again and returning to Issy.

Improvements at Juvisy.

THE new management at Juvisy have been making considerable improvements lately. Electric current can now be obtained by the tenants of the hangars either for lighting or power, while an hotel has been started on the ground with restaurant, &c.

At the Breguet School.

LIEUTS. Galezowski and Sensever, of the French Colonial Artillery, have obtained their *brevets* upon Breguet machines at Douai, and Lieut. Ludman made the second test for his military certificate by flying from Douai to Doullens and back also on a Breguet.

French Military Competition.

IN the list of entries for the French Military Aeroplane Competition, two names have to be added to the list given last week, viz., MM. Voisin Frères, who have entered one of their "Canard" type machines, and M. Coanda, who will be represented by an aeroplane as well as his engine.

An Unpleasant Experience.

WHILE flying her monoplane at St. Etienne, Mdle. Marvingt had a very unpleasant experience. The engine stopped when she was over a café, and the only possible landing place was the restricted area of an adjoining skittle alley. By good steering Mdle. Marvingt succeeded in bringing her machine down, although it was somewhat damaged through running into a tree, she escaping with nothing worse than a shock.

A Flying Meeting for Aix-les-Bains.

M. HENRY DEUTSCHE DE LA MEURTHE is a prime mover in an endeavour which is being made to organise a great flying meeting to be held at Aix-les-Bains next year. The proposal is somewhat unique, inasmuch as, as a main attraction, it is suggested that flights should be made over the Bourget Lake, the competitors rising from and alighting on the surface of the water.

Lieut. De Grailly Qualifies as Military Aviator.

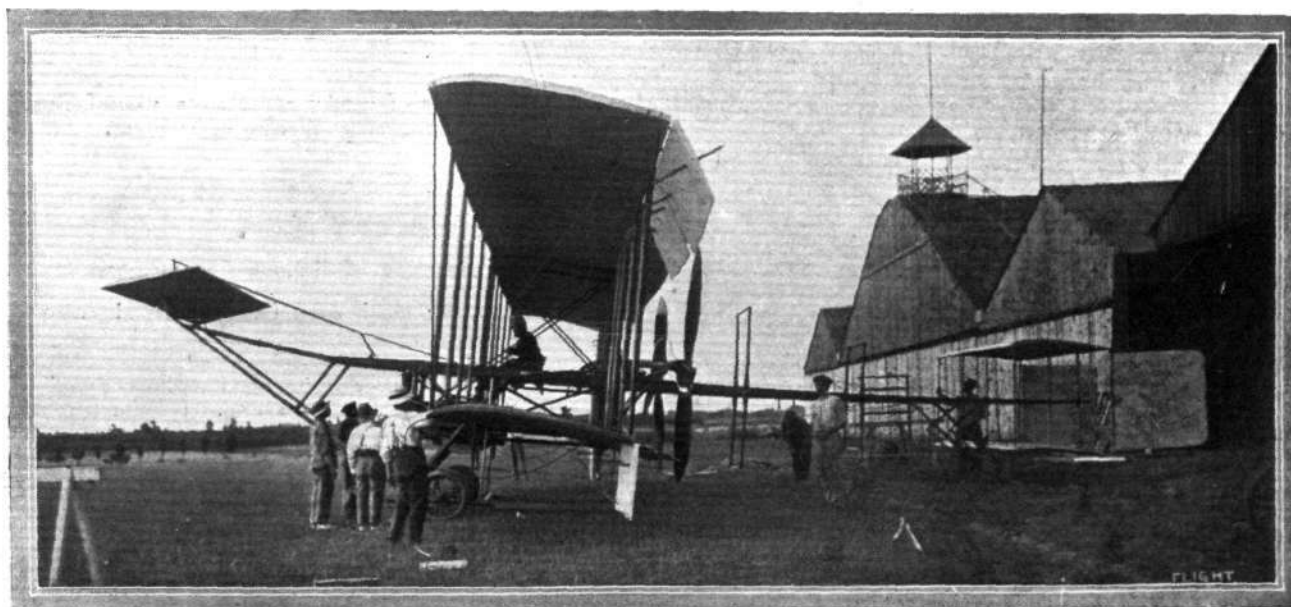
USING one of the latest R.E.P. monoplanes, Lieut. de Grailly, on the 5th inst., made the last of his qualifying flights for his superior military certificate, by flying from Buc to Dreux and back.

Prevost Visits M. Deperdussin.

MOUNTING his two-seated Deperdussin monoplane, and accompanied by a friend, Prevost flew from the school ground at Betheny to Laon, and after doubling the Cathedral tower continued on for 25 kiloms. and landed in the grounds of M. Deperdussin's house. Afterwards he flew back to the aerodrome, his flying time for the round trip of 125 kiloms. showing a speed of about 95 k.p.h.

A Farman for the Russian Army.

A DEPUTATION of Russian officers paid a visit to Mr. H. Farman's works at Bouy on the 1st inst., in order to witness trials



The latest De Dion Biplane.

carried out with a new biplane built for the Russian Army. It was flying for two and a half hours carrying a useful load of 230 kilogs. It climbed 720 metres in seven minutes and showed a speed of about 90 k.p.h. It was fitted with a 50-h.p. Gnome.

Mdlle. Dutrieux Flies over the Sea.

DURING her visit to Cherbourg last week Mdlle. Dutrieux was flying over the sea, and on the 2nd inst. travelled for a 10 kilom. jaunt along the coast. Her mount was, of course, a Henry Farman with Gnome engine.

Cross-Country in the Netherlands.

FOR the third time Chevalier Laminne, on his Henry Farman racing machine, on the 1st inst. flew from Kiewit to Baken and Wesel.

Durafour has a Smash.

WHILE experimenting at the Viry Aerodrome, Geneva, the

Swiss aviator, Durafour, fell and sustained injuries to the stomach, and also fractured his right arm. He is, however, progressing favourably.

New York to Philadelphia.

A PRIZE of £1,000, offered by one of the big American stores for a flight from New York to Philadelphia, has been won by Mr. Lincoln Beachy.

Aerial Racing in Canada.

STARTING from Hamilton, Mr. McCurdy and Mr. Willard have both flown to Toronto, a distance of about 50 miles. The former rose to a height of 3,000 feet, and flying across Lake Ontario completed the distance in 32 minutes, but Mr. Willard, who flew overland and at a height of only 500 feet, took 45 minutes, being delayed by the gusty nature of the wind.

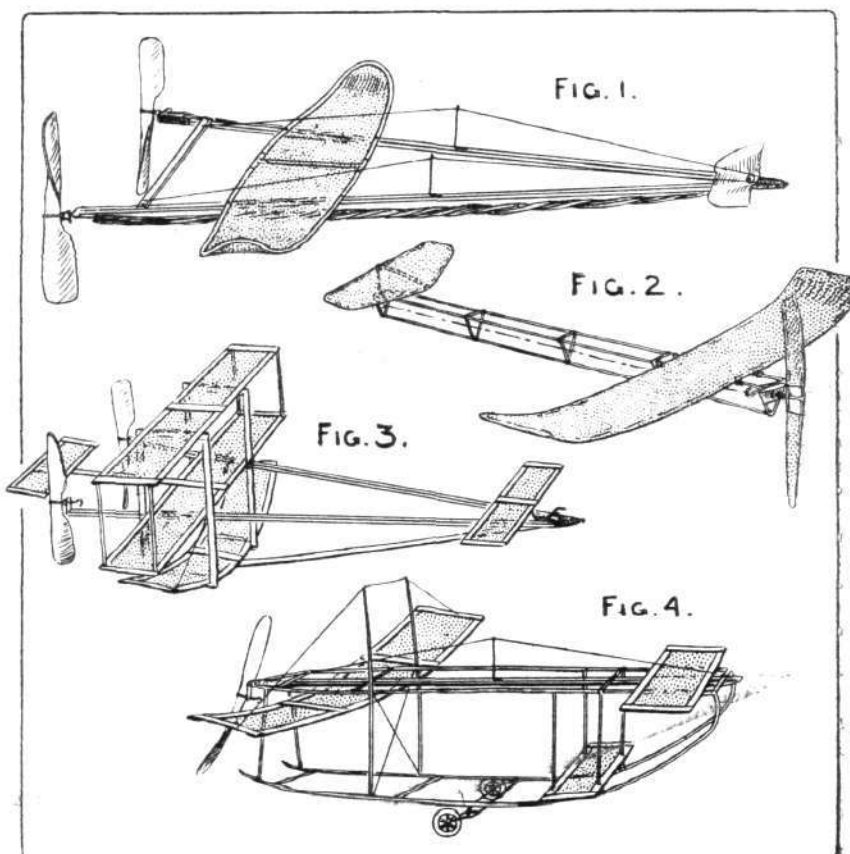
SOME MODEL AEROPLANES.

WE illustrate herewith a selection of model aeroplanes manufactured by the Aerial Engineering Works, Balham, S.W. All these models are excellent flyers and are very strongly constructed. Their latest model—No. 2—flies remarkably well, especially in fairly strong winds, and flights of over three hundred yards are easily obtained. This particular type, shown in Fig. 1, measures 36 in. in length and the span is 15 in. Twin "Aerial" propellers, 8 in. in diameter, are fitted, and right in front is an elevator made of thin aluminium.

The tips of the main plane are turned upwards, thereby giving a certain amount of stability. Fig. 2 shows the "Stediplane," which is constructed throughout of wire, so that it will withstand a considerable amount of knocking about. The main plane, which is covered with special aeroplane fabric, has its tips curved upwards and can slide fore and aft along the fuselage, thus allowing for adjustment. The propeller is also constructed of wire and is covered with fabric, while right in front is an adjustable elevator. Fig. 3 represents a model of somewhat original design. This model is named the "Stanley" triplane, and is an exceedingly fast flyer. It has two planes—measuring about 20 in. span by 4 in.—situated biplane fashion with a third plane immediately under the latter, and curved upwards at the tips. At the forward end is an adjustable elevator and just behind the main plane is a "steading" plane or tail. The model is driven by two propellers situated behind the main plane. Fig. 4 shows a Valkyrie type monoplane measuring 24 in. in length and 26 in. span. Although this model will rise from the ground, better and longer flights are obtained when it is launched by hand. The Aerial Engineering Works, as well as manufacturing many other types of models, supply a very large assortment of accessories and parts.

They also supply an excellent parcel of materials for building a model similar to Fig. 1—consisting of two finished propellers, main plane, fabric, wood framework, elevator, rubber, &c. Working drawings and full instructions for building and flying the model are also included. The above is sold at a very reasonable price,

and we have had the opportunity of inspecting and testing one of these models with most satisfactory results.



Sketch showing four types of model aeroplanes manufactured by the Aerial Engineering Works, of Balham.

SCHOOL AERO CLUB NOTES.

By ROBERT P. GRIMMER, General Secretary, British Federation of School Aero Clubs.

To judge by the correspondence that I receive daily, the objects of the British Federation of School Aero Clubs are as yet imperfectly understood by the public in general. The school aero club movement has three separate aspects, viz. (1) patriotic, (2) sporting, and (3) educational. No one who has ever given serious thought to the subject will deny that in the course of a few decades aviation will veritably decide the fate of empires, and that it will be even a greater factor in "welt politik" than was ever sea-power in the past. National interest must be roused and sustained, otherwise the story of Carthage and Tyre may be the story of Britain. I am perfectly aware that in these days patriotism is "bad form," the mercenary commercial spirit that is crushing down our American cousins has already received a firm footing in our own country, where nothing that cannot show a substantial cash dividend is

worthy of attention; but, in spite of all this, several generous patrons have already shown that

"We are not money-spinners all,
And some love Britain and her honour yet."

Now we come to the sporting aspect. I claim that aviation—model or otherwise—is one of the best of sports, and at the same time is not, as so many others are, a merely useless pastime. Can it truly be said that cricket and football are patriotic games? As sports pure and simple, they are good—especially if *actually* played and not merely watched—but where does the patriotic value come in? The athletic properties of model aeroplane flying would be incredible to anyone who had not actually flown a long-distance machine, and at the same time there is always the possibility that one may hit upon some new device which will revolutionise the

design of the full-sized aeroplane. The humblest schoolboy may discover some radical improvement, and even the despised paper glider may be the indirect means of advancing the science of aviation. Actual gliding is infinitely more practical than model aeroplane flying, and the apotheosis is reached if one is fortunate enough to become the possessor of a real aeroplane.

Then there is the educational aspect. It has been pointed out that no handicraft is so inclusive of the various arts and sciences as the making of model aeroplanes. The brain, the hand, the eye, are all called into requisition, and mechanics, physics, and mathematics each have to give their quota. Scale drawing is a *sine qua non*, and let it be understood that as in regard to the sporting aspect, there is something more—the spirit of patriotism. The Federation seeks to secure the establishment of aero clubs in every school in the country, to organise inter-school competitions, and to offer valuable prizes for scale-drawings, scale-models, inventive ideas, essays, and scientific research generally. But, above all, it aims at educating the rising generation to a sense of the immense importance of air-power.

I will now deal with some of the objections to the school aero club movement. In the first place, parents seem to consider that if their sons are allowed to make models they will certainly want to become pilots and consequently get killed! Possibly one per cent. of the members of the Federation may become pilots, but it does not at all follow that they will break their necks. People have been

known to sustain fatal injuries in football and cricket matches, and I have even heard of promising youths whose careers were brought to an untimely close by the comparatively safe recreations of boating, fishing and bathing. Another objection to the school aero club movement is voiced by a correspondent, who writes as follows:—"Ninety per cent. of the schoolboys of to-day will, in a few years, be engaged in commerce; why then harp upon war possibilities which will not occur in the trades that they are certain to enter?" Is not the writer aware of the fact that the commercial supremacy of Britain is dependent largely upon her position as the Greatest of the Powers? She holds this at present by virtue of her command of the seas, she will soon have to hold it by virtue of her command of the air! If Britain ceases to be a Great Power—as she will certainly do if her people disregard the possibilities of aviation—I am inclined to think that the major part of her commerce will find its way across the North Sea to the shores of an alien nation more liberal in her views towards a new science than we have been. I am no lover of war—it is a hateful thing at the best—but my ardent advocacy of the school aero club movement has always been prompted by a realisation of the fate of our country, commerce included, if she falls behind in the race for air-supremacy.

In the future the aeroplane will certainly be employed in commerce to an extent that nobody can grasp to-day, but it is indeed a suicidal policy to close our eyes to the terrible possibilities of its use in warfare.

SOME NOTES ON FABRIC VARNISH.

It is really strange that no one in England has yet invented a really satisfactory fabric varnish, for there would no doubt be a considerable market for a preparation that would render ordinary cotton material air proof, damp proof, and impervious to the rotting effect of the castor oil that habitually soaks those surfaces in the wake of the engine exhaust, that would reduce the skin friction of the fabric and have the effect of shrinking, and so tightening it when applied after the fabric is in position.

Quite noticeable was the difference in the condition of the fabric on the wings of "Beaumont's" and Vedrines' machines after their 1,000-mile arduous journey round Britain. On the wings of "Beaumont's" monoplane the fabric had become stretched and baggy, so much so in fact that many would have deemed it inadvisable to have used the wings again before they had either been recovered or the fabric reapplied.

Although Blériot uses undoubtedly one of the best of rubberised fabrics, this sagging can only be accounted for by the assertion that rubber, although excellent in some respects, is by no means the best proofing agent it is possible to use, as it is as susceptible, and probably more so, to extremes of atmospheric temperature and humidity as is the fabric itself.

Again, it is universally known that oil and grease have a deleterious effect on rubber, and one would have thought that for this reason, if for no other, constructors and others interested would have sought out a means of further protecting the fabric on those surfaces, to the rear of a machine, that are constantly receiving a shower of finely divided oil.

Vedrines' wings were, on the other hand, in as good condition as the day they were made. The high-toned drum-like sound, when the fabric was snapped with the finger, indicated that all the adverse conditions of sun, wind and rain had not altered its character in the slightest. The tail planes too, although covered with a film of oil were, none the less, tightly stretched and by merely wiping them with a petrol-soaked rag all traces of castor oil could be effectively removed.

The varnish that is used to treat the Morane wings is colourless and transparent, and is applied after the fabric is stretched over the wing skeleton. Its application, in addition to shrinking the fabric, has the effect of embedding the rough weft and warp of the material, thus presenting a perfectly smooth surface, and consequently diminishing skin friction. The base of the varnish is singularly like celluloid as far as outward appearance is concerned, but it is hardly likely to be of this inflammable material.

It has occurred to the writer that in more than a few instances the *cabré* flying of a much used Farman could be traced to the oil-saturated condition of the tail planes. Would it not be a much better plan in such a case to treat the tail fabric so that the oil could be easily removed instead of adopting the usual expedient of increasing its angle of incidence, and so diminishing its efficiency?

Both the Nieuport and the Deperdussin firms in the manufacture of their machines treat not only the supporting surfaces, but also the covered-in fuselages, with a preparation that is marketed in France under the style of "Emaillite," which is in effect similar to the Morane composition, with the exception that instead of being colourless it is of a brownish tint.

Patents.

IN a little book entitled "All about Patents," Mr. Clarence W. Crossley sets forth in the following concise manner a definition of things that are patentable. We commend this little book, which only costs 9d., to our readers, many of whom it may save much disappointment and no little cash by a careful perusal of its pages.

What may be patented:—

a. An improvement in a machine, article, or process, or in a part of a machine, article, or process, by addition to, omission from, arrangement, or modification.

b. The application of an old machine, article, or process to a new use; but only if there is invention in the new application, and it is such as would not, as a matter of course, occur to a user of the old machine, article, or process.

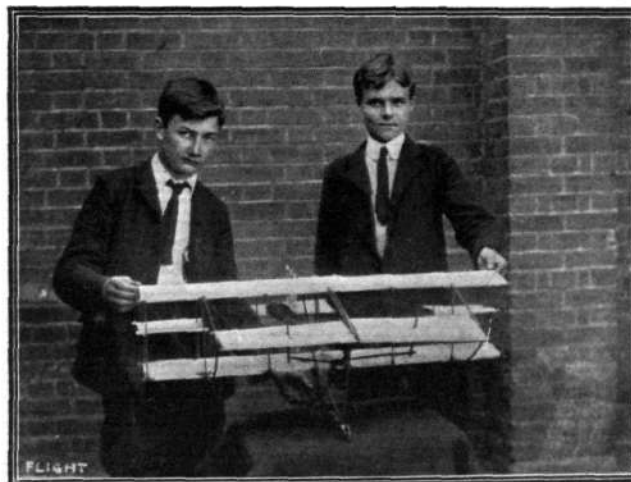
c. A practical way of carrying into effect a discovery or principle, so as to produce something new, tangible, and useful, whether the means employed be new or old, or partly new and partly old.

d. A combination of old, new, or old and new parts, producing a new and useful result.

e. New, or partly new, means or processes for producing an old or new object or result.

f. New, useful, and ingenious applications to a useful purpose of things or processes not before applied to that purpose.

g. New and useful processes employing known or new means, or a combination of those means.



Model aeroplane, made by Masters Refoy and Turnbull, of Salesian School, Farnborough—the only tool employed being an ordinary pocket-knife. We understand that this model has been declared by Mr. Cody to be a perfect miniature of his type of machine. It also has the merit of flying well.

CORRESPONDENCE.

* * The name and address of the writer (not necessarily for publication) MUST in all cases accompany letters intended for insertion, or containing queries.

Correspondents communicating with regard to letters which they have read in FLIGHT, would much facilitate ready reference by quoting the number of each such letter.

Low-Powered Flight.

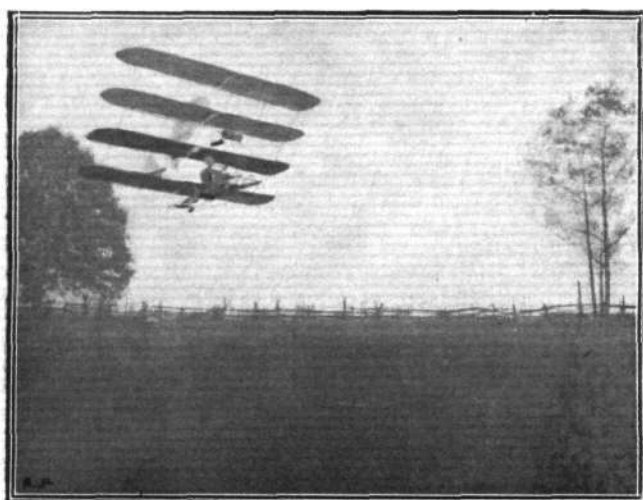
[1295] Since sending my last letter re low-powered flight I have written Mr. Sellers, and through his courtesy I am enabled to give you details of his machine. I enclose his letter and one of the photos which he has kindly furnished.

Port Washington, July 6th.

J. G. GILPATRIC.

[Enclosure from Mr. Sellers.]

Your letter of the 20th was received on my return from New York. I am not anxious at present to make public the details of my aeroplane, but shall give you the information asked for in your letter, and, if you wish, you are welcome to send this letter to FLIGHT and that paper can publish it and the enclosed photos if desired. I did not read the article you mention so do not



Mr. Sellers' low-powered quadruplane in flight.

know what is claimed in it. The machine shown in flight in the two photographs enclosed was built in 1908. The rudder shown is only a temporary makeshift. My object in building this machine was to try out some results obtained in laboratory experiments, and incidentally to produce a light, small, slow and small horse-power machine. The first engine used was 2-cylinder, 4-cycle, opposed, air-cooled, weight 23 lbs., bore and stroke $3\frac{1}{8}$ ins. giving 4-b.h.p. at 1,400; later increased to near 5-b.h.p. by auxiliary exhaust ports. Propeller 54 ins. by 24 ins. Weight of machine ready to fly, with this engine, 78 lbs. My weight 130 lbs. The present engine is of the same type but $3\frac{1}{8}$ in. bore and stroke, about 8-h.p.

Weight of machine with this engine = 110 lbs., propeller 66 ins. diameter by 30 ins. maximum pitch. The first engine would fly the machine but would not give enough power to climb or turn. The present engine gives plenty of power while not overheated. Both engines quickly overheat in warm weather (air cooled).

Area of this aeroplane 200 sq. ft.; planes 3 ft. by 18 ft. We timed a number of flights in still air; speed 21 miles per hour. The machine is light but has been found strong enough to stand intermittent use for two years.

Baltimore, June 29th.

M. B. SELLERS.

[1296] I noticed in FLIGHT (letter No. 1229), June 24th, that Mr. R. G. P. would like to know further particulars about the American machines which have flown with 4-h.p. and 5-h.p. An account of these machines came out in the American magazine, *Aeronautics*, for October, 1910.

Mr. M. B. Sellers, of Kentucky, has a multiplane consisting of four planes in the step style, which is driven by a four-foot tractor screw directly connected to a 2-cyl. opposed Dutheil and Chalmers motor, which gave a brake horse-power of full four.

Mr. Donald H. Gordon, of Bostonia, California, has a biplane driven by a 5-h.p. twin-cyl. Curtiss motor-cycle engine, cylinders $3\frac{1}{4}$ by $3\frac{1}{4}$, weight with batteries and coils 78 lbs. Weight of machine complete 240 lbs. Mr. Gordon weighs 140 lbs. The motor drives a geared-down propeller of 6 ft. diameter by 5 ft. 8 ins. pitch. The motor runs 2,100 revs., which turns a geared down propeller at 700 revs. a minute. The biplane is of the "small plane in front" type, with no tail but a small rudder. Top plane 26 ft.,

lower 24 ft. by 4 ft. chord. Angle of incidence about 7° , camber $2\frac{3}{4}$ ins.

There are some more American machines which have flown with low power.

Hood River, Oregon.

GEO. L. BATCHELOR.

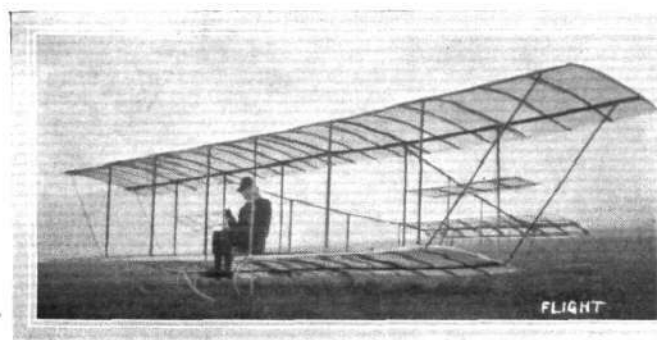
My First Glider.

[1297] I enclose a photo of a biplane-glider that I have made entirely myself with the exception of the wire strainers and aluminium sockets, which were supplied by Messrs. Handley Page, Ltd.

This biplane being the first and only one made in Dudley I had her out a week or so ago in a wind of about 15 m.p.h., my great difficulty being to hold her down. I had four men to assist me, and when running the slightest distance the glider shot up into the air like a kite and travelled over our heads. At first this quite startled me as I never dreamt she would rise so quickly. After running some distance we stopped, when I expected to see her come down crash, but no, to my great astonishment she landed like a feather.

The wind getting considerably stronger and requiring all our strength to hold her down, I thought it advisable to get into the pilot's seat and see what she would do by towed flights.

A run as usual taking place, the glider once more soared beautifully into the air, quite 10 to 12 ft. from the ground with



myself at the controls, requiring very little skill in balancing and elevating as the speed was slow, requiring quite 30 m.p.h. before the ailerons would be of any service.

No free flights were attempted as the field is quite flat and surrounded by trees, this being my only drawback to find a suitable slope. I am at present waiting for the grass to be cut when I hope to get some better results.

I would like to mention that FLIGHT has been of great service to me, and that apart from models this glider is my first attempt. Dimensions:—Span, top plane 30 ft., bottom plane 20 ft., chord 5 ft., tail 7 ft. 6 in. by 3 ft., elevator 7 ft. 6 ins. by 18 ins., area 283.75 sq. ft.

Dudley.

WALTER DAVIES.

Vortex Principle of Flight.

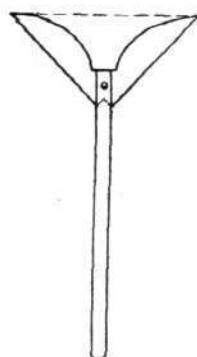
[1298] In my letter No. 1263 of the 15th ult., I showed, by reference to unimpeachable photographic and other evidence, that the wings of flies have not the movement which Mr. Dring attributed to them, and, consequently, that the "Vortex Propeller," whatever its other merits, had no claim to be founded on a principle exemplified in insect flight. I now propose to show that so far from the "vortex propeller" having merits as a propeller which would place it above existing forms, its efficiency is so low as to make it worthless for mechanical flight.

Broadly defined, a propeller is a means for imparting motion to (accelerating) fluid particles in such manner as to enable the resulting reaction to be used for moving the body to which the propeller is attached. It follows from Newton's laws of motion that (other things being equal) for greatest efficiency the acceleration of the stream of fluid particles must be in one direction only, i.e., in a direction diametrically opposite to that in which it is desired to travel. Acceleration in any other direction whatever means so much loss of work. This is one of the fundamental conditions of efficient propulsion, and failure to meet it is responsible for most of the losses which occur in practice with any form of propeller. It may be said, in fact, that the problem of increasing the efficiency of our propellers is to a great extent bound up in the more successful meeting of this condition. ("Efficiency" in the above sense is denoted by the ratio

useful work total work not be entered into here).

There is a broader application of the word which need not be entered into here). It is obvious that the above limiting condition is met very badly indeed by the "vortex propeller." The "vortex" ensures that the greater portion of the work delivered to the propeller-shaft is expended on accelerating the fluid particles in a direction at right angles to the correct one, the discharge is at 45 degrees to the line of desired thrust, and the wake is dispersed in such manner as to cause the maximum of loss from eddy formation. In short, the work-ratio above noted would have, for the "vortex propeller," about the minimum value possible of attainment by an instrument deserving the name of propeller.

The above theoretical considerations may not carry the same conviction to some minds as a practical demonstration would. A very small outlay enables us to supply the deficiency. The materials necessary are a piece of "tin" three inches square, two wooden pen-holder handles and two pins. Divide the tin across diagonally and cut the resulting pieces to the two-bladed shape shown. (See diagram).



Split the penholders for a short distance at one end, insert the tin, and drive the pin through to make all secure. We now have 2 two-bladed "vortex propellers," of equal size and weight.

Leave one with the blades entirely flat, turn the other into a screw-propeller by twisting the blades. Do not alter the "disc-area" in so doing.

By holding the handle of the screw-propeller vertically between the flattened palms of the hands, and sliding one palm over the other, a rapid rotation may be imparted to the propeller. With a little practice at "letting-go," this helicopter may be caused to rise many feet

into the air. Now take the "vortex-propeller," and attempt the same feat. *It will be found impossible to do so.* This is a conclusive test, although a humble one. The angular velocity of the blades and their weight is the same in both cases, consequently the work capable of being given out by each on release is the same. In the one case this work is used to raise the apparatus—in the other case it is used chiefly in worthless churning of the air, and the lifting effect is negligible.

BERTRAM C. COOPER.

The Clarkson Aerocar.

[1299] In your issue 127, page 476, you refer to those investigators who are trying to solve the problem of flight on other lines than those of the present aeroplane and the scant appreciation their efforts receive. You say, "So much is this the case that it has seemed almost as if these workers had become discouraged and dropped their investigations."

As one of these investigators, permit me to say that I am not discouraged, and neither is my invention dead, but on the contrary is very much alive. I should not, however, feel justified in taking up your space unless I had something fresh to report. I will therefore state what has been done since the data was obtained which I sent you last.

It will be remembered that this data was obtained from a propeller 8 ft. in diameter, but for exhibition and lecturing purposes I had a small model made 2 ft. in diameter.

From this I demonstrated to interested crowds at the recent Aero Show at Olympia, about seven times a day. I cannot myself complain of scant appreciation, for one day I received two spontaneous offers of capital to form a syndicate. Immediately after the show, I put in hand a model of a machine about 7 ft. long, which will be self-contained and carry its own motor; in other words, a model that will rise vertically from the ground, fly fast or slow, remain stationary in the air, and descend slowly. It is being made almost entirely of Duralumin. Of course in dealing with this new metal I had to make many tests of strength in relation to weight, and to make most careful calculations so that the model when completed will actually fly. As I have proved from tests that my 2 ft. model propeller lifts vertically between 4 and 5 times the weight of the elastic motor, there is very little doubt of its success.

For the benefit of those who intend using Duralumin, I may say that it is made in five qualities of "temper." The "normal," or "A" quality is the most workable. The sheets may be punched and riveted, but in the harder qualities they are liable to split or break.

The above-named 7 ft. model will, I expect, be finished by the end of this month, when I will report further.

The next step will be to build a full-size propeller, viz., 8 ft. diameter and 8 ft. wide, of the right material and (as far as possible) strength. Then test it in a workshop up to about ten times the strain it is ever likely to have to stand. Having done this we reach

the final stage, and build a complete "Aerocar," which would be tested in the workshop in the same way.

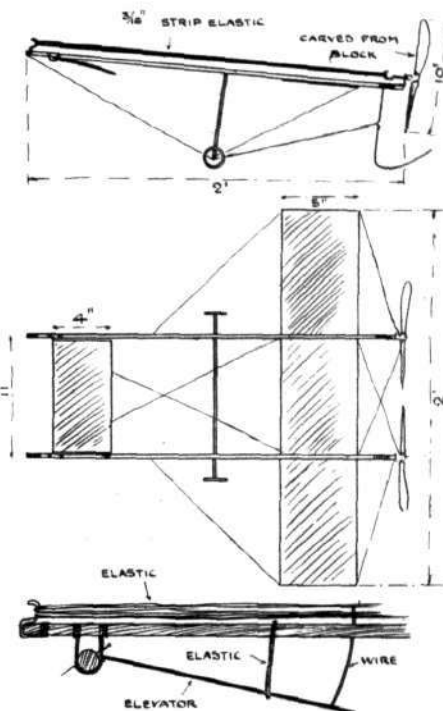
Manchester.

JOSEPH CLARKSON.

MODELS.

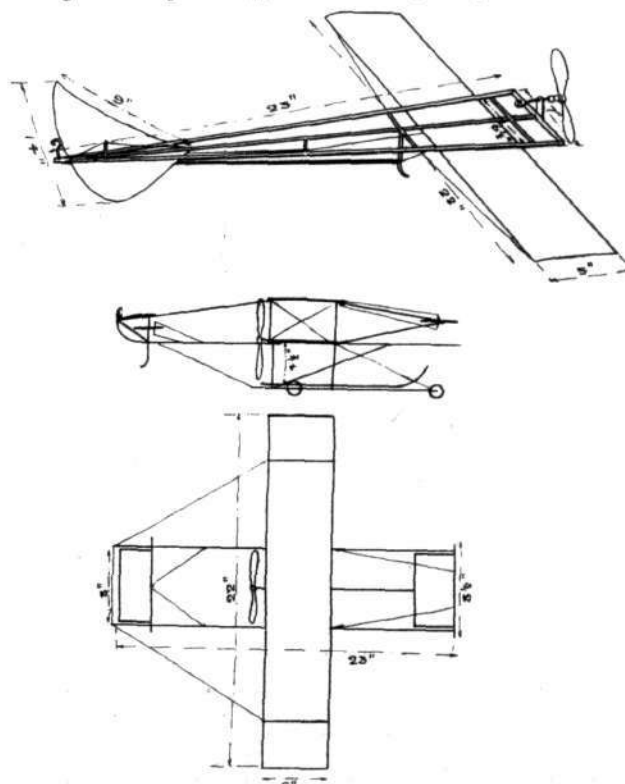
Model Construction.

[1300] This little model, suitable of rising under its own power, may be of interest to readers of FLIGHT. I have fitted a device for altering the angle of the elevator while in flight. The elevator is pushed to its highest angle, as shown in sketch, which stretches the elastic. The elastic contracting pushes the wire slowly through a hole in the main boom. When the propellers are wound up ready for flight the elevator must be at the highest angle. Place the model on the floor (which must be as smooth as possible), let go, and the aeroplane will rise as gracefully into the air as any of the large ones do, after a run of about 6 yards. The length of run can be altered by the angle of the elevator when the model is started. All the materials were bought from Mr. A. Melcombe, Bedford.



F. WEBB.

[1301] I am enclosing a few sketches of my single-screw racing monoplane. It is of the tail-first design, and makes a steady flyer. The fuselage is a simple triangle made of ash, the planes of white

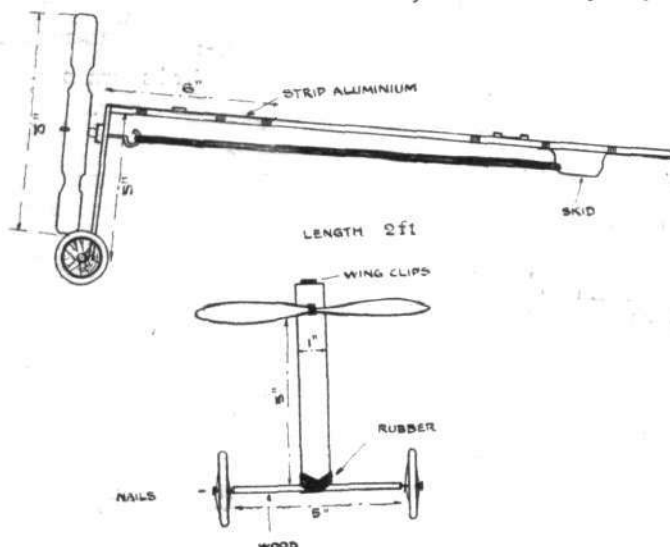


wood, and the spars of bamboo. The elevator is a triangle made of white wood. Perhaps a few sketches of my model biplane may be of use to Mr. Read (letter 1147); it cost me about 3s. to construct.

Dover.

H. D. DAVIS.

1302] I herewith enclose sketches of a Blériot type of chassis which I hope will be of some use to your readers; it is very easy to make and of low cost. I should be very thankful if any of your



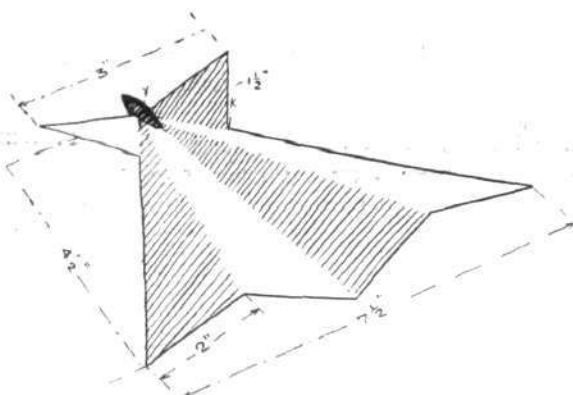
readers could tell me the best type and size of wings suitable for this machine (barring the Blériot type).

Glasgow.

ARTHUR H. ALEXANDER.

Paper Gliders.

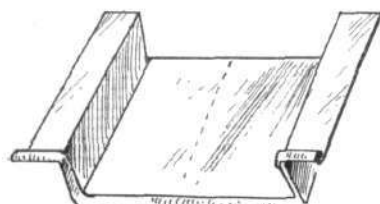
1303] I enclose a sketch of a paper dart that makes rather a good glider. It is loaded with a small piece of wood forming a kind of



beak. Glides of about 30 ft. can be accomplished with this model.

Bath.

W. W. LACY.



1304] The best paper model I have yet tried is illustrated in the accompanying sketch. It is made of fairly stiff paper with a rolled leading edge and is folded as shown in the sketch.

L. F. HUTCHESON.
Wimbledon.

NEW COMPANY REGISTERED.

Morts Patents, Ltd., Acton Hill Works, Acton, W.—Capital £5,000, in £1 shares. Manufacturers of motor car, aeroplane, airship, and marine engines, &c.

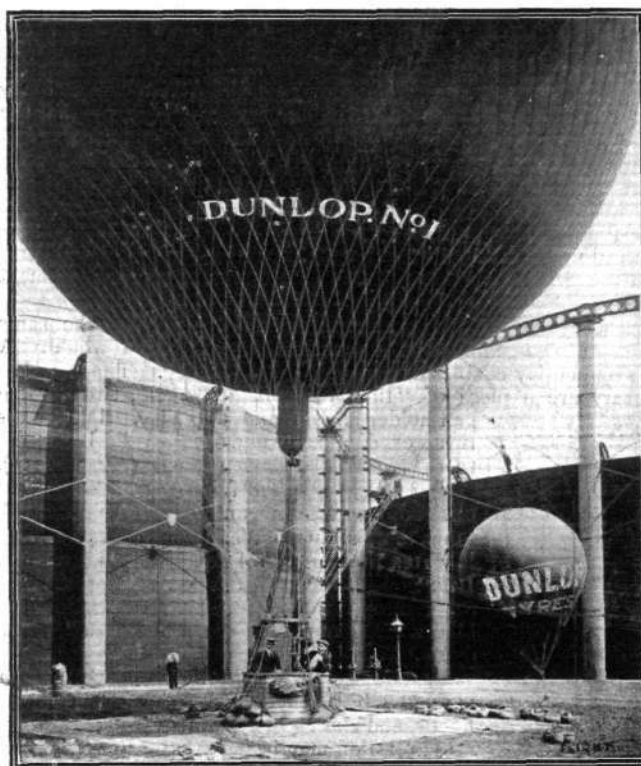
PUBLICATIONS RECEIVED.

Monoplanes and Biplanes: their Design, Construction, and Operation. By G. C. Loening, B.Sc., C.E. London: Sampson, Low, Marston, and Co., Ltd. Price 12s. 6d.

The New Art of Flying. By Waldemar Kaempffert. London: Sir Isaac Pitman and Sons, Ltd., 1, Amen Corner, E.C.

Charts of the Atmosphere for Aeronauts and Aviators. By A. Lawrence Rotch, S.B., A.M., and Andrew H. Palmer, A.M. New York: John Wiley and Sons. London: Chapman and Hall, Ltd.

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"Dunlop No. 1" balloon, made for the Dunlop Rubber Co. by Messrs. Short Bros., Battersea. Its circumference is 142 ft., with 50,000 c.f. capacity. Mr. Eustace Short and Mr. E. Field, a Dutchman and an enthusiastic aeronaut, are in the car. A contrast in size is seen in the small advertising balloon in the background.



Aeronautical Patents Published.

Applied for in 1910.

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- 17,185. J. W. DUNNE. Aeroplanes.
- 17,510. M. J. de C. DODD. Aeroplanes, aerofoils, and flying machines.
- 19,759. S. McCLELLAND. Automatically balancing aeroplanes against action of side-winds or gusts.
- 24,882. PIESTRAK AND GAUTHIER. Aeroplanes.
- 28,212. J. P. GLOVER. Aerial machines.
- 28,773. RAMEL AND BILLE. Maintaining equilibrium of aeroplanes or flying machines.

Applied for in 1911.

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- 11,455. L. BLÉRIOT. Landing skids for aeroplanes.

PRINCIPAL CONTENTS.

	PAGE
"Considering the Question"	690
A Study of Bird Flight	691
Women's Aerial League at Hendon	693
Progress of Flight About the Country	694
Average Weather of August	695
From the British Flying Grounds	696
Daily Mail Circuit of Britain	698
British Notes of the Week	699
Fritz Monoplane	701
An Irresponsible Law Congress	703
Foreign Aviation News	704
Some Model Aeroplanes	706
School Aero Club Notes	706
Fabric Varnish	707
Correspondence	708

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